

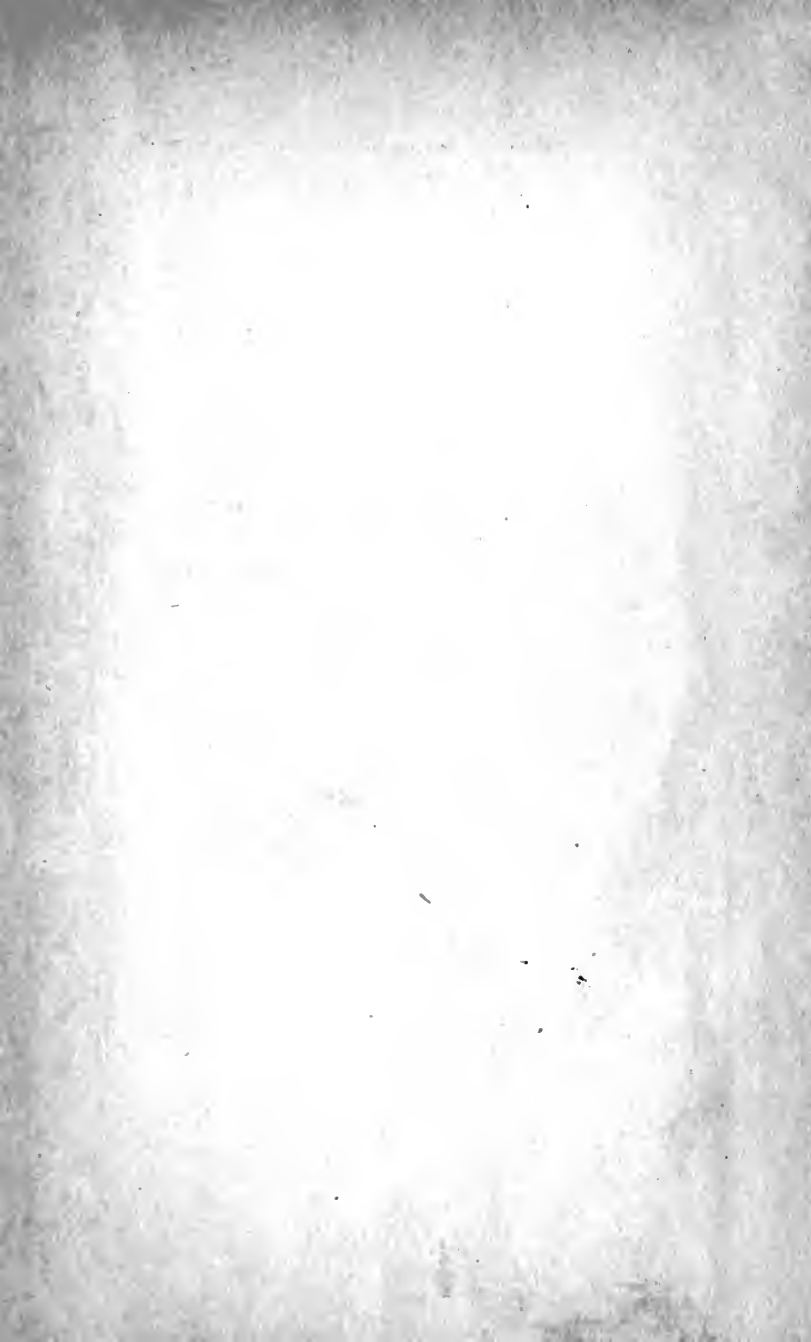
A HISTORY OF INDUSTRY

BY
G. H. GODDARD

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A HISTORY OF INDUSTRY

BY

ELLEN L. OSGOOD

HAAREN HIGH SCHOOL, NEW YORK CITY



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TO
MY FATHER
JOSEPH OTIS OSGOOD
THE INSPIRATION OF ALL THAT IS BEST IN MY WORK
THIS BOOK IS DEDICATED

PREFACE

This book is the result of several years' experience in teaching industrial history in the Julia Richman High School of New York City. As there was no textbook which seemed to me to meet the requirements of the subject, I worked out an outline and a bibliography and taught the subject by the library method. After the outline was published and other teachers attempted to use it, most of them seemed to feel that a textbook was necessary to the success of their work. A desire to make possible a more extensive teaching of the subject led to the creation of this book.

The length of time given to industrial history in the Julia Richman High School has varied from year to year. At first the subject was dealt with somewhat inadequately—in five periods a week for twenty weeks. It has since been allowed either four or five periods a week for forty weeks. If industrial history is preceded by commercial and industrial geography and followed by economics, it may be covered satisfactorily in less time than where all the training in one or both of these subjects must be introduced into the industrial history. This book is intended to furnish material for a five-period course running through the entire year.

The history of industry presents economic laws in action. To obtain the greatest possible educational value from such a course it should be followed by a short course in economics, with special application to the problems of the day. I believe that if economic laws are seen first historically and then in their present-day application by the young people of this country, there need be little fear that the United States will not fulfill the high destiny in world affairs to which events are calling her. With the best of intentions toward our responsibilities, shallow thinking on economic problems may yet ruin us.

ELLEN L. OSGOOD



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A HISTORY OF INDUSTRY

CHAPTER I

LAYING THE FOUNDATIONS OF INDUSTRY

The foundations of industry were laid in the earliest stage of the development of civilization. This stage is usually called the Primitive Period of the Stone Age, but it might with more exactness be named the Childhood of the Human Race. The development of mankind from savagery to civilization has followed much the same course as the development of a man from babyhood to maturity. In the Primitive Period men gradually raised themselves above the beasts of the field. They learned to talk, to worship the forces which they felt about them, to act together in groups for mutual protection, and to use their hands and minds for the better satisfying of their needs. These needs extended little beyond the desire for food, clothing, and shelter, but in their attempt to meet them primitive people invented the fundamental industrial processes.

For most peoples of the earth this childhood began a hundred thousand years before Christ and has been over for ten thousand years. But just as some people never develop beyond children, so some races have not entirely passed out of the primitive stage even in the twentieth century. Such people live in the interior of Africa. Most of the Indian tribes were in this state when white settlers first came to this country, and some retain many of their primitive methods of industry to the present day.

Our knowledge of the beginnings of industry comes partly from the objects made many thousand years ago which archaeologists have dug up, and partly from a study of backward peoples who are still living. From these two sources, and from the writings

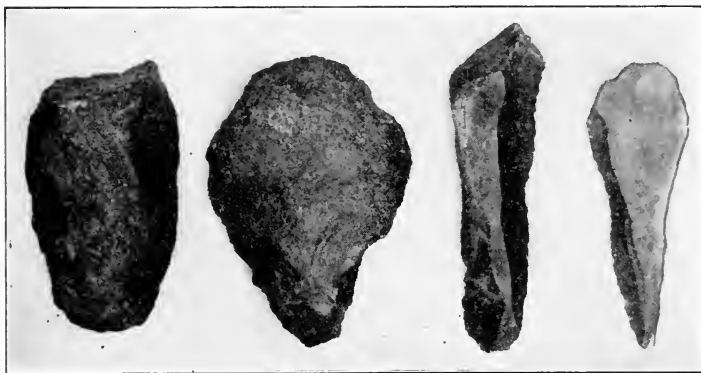
which our own ancestors have left in regard to the Indians as they knew them, we are able to reconstruct the distant past.

In those early days, before civilization had begun, men lived much as animals live. They traveled about in search of food and took shelter under leaves of overhanging branches when storms threatened. What nature offered that satisfied their needs they took, but they made little attempt to improve on what they found. The grain and wild berries that grew in the fields, with the flesh of such small animals as they were able to catch in their hands, served for their food. No one knew how to make a fire, so there could be no cooking done. When night came they lay down under the trees or in the shadow of a rock. In such a state of existence as that, man had no industry.

Discovery of fire. As time passed a number of very wonderful discoveries were made by these animal-like men and women. One of the very earliest was the discovery of how to start and how to use a fire. Lightning striking in the forest must have started fires frequently, and it may be that experience with these fires taught men that a fire may be something else than a terrible devastating curse that destroys the trees and drives all living things from the forest in terror of their lives. Perhaps someone who was rubbing two sticks together started a very little fire,—such a tiny fire that he dared play with it, feeding it dry leaves for the fun of seeing it burn, and, as it grew, finding the warmth pleasant. However fire was discovered, of one thing we are sure: very early in human development man learned to make fires and cook his food by them. From that moment he stood above the animals, because by using his intelligence he was turning what nature offered into a form better suited to his needs. Improvements in food were followed by the invention of stone weapons and tools, better clothing, and more suitable shelter.

Stone weapons. Wherever primitive man lived innumerable stone weapons are found. It is not strange that the making of stone weapons should have been one of the earliest as well as one of the most important industries created by mankind. Man was not as strong as many of the animals living about him, so he could

protect himself only by running away or hiding from them. He had no strong, sharp claws, like the tiger, with which to defend himself and kill his meat for dinner. Self-preservation taught him to take up stones to fight off his foes or kill the animals he hunted. No doubt at first he used these stones very much as apes do, picking whatever came to hand and letting it fly at the enemy. In the course of time he found that hard stones with sharp edges were much more effective weapons than round lumps of rock. After hunting for such pieces it occurred to him that a stone

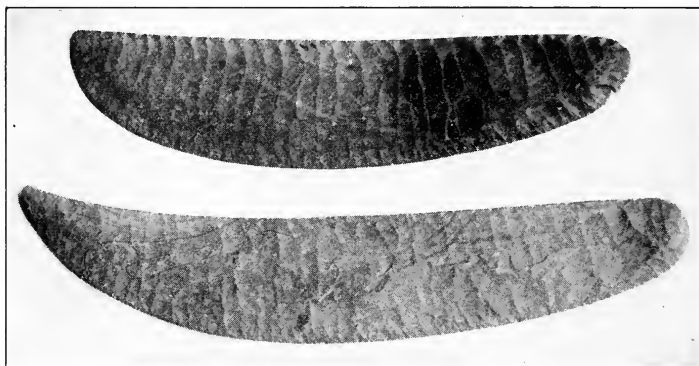


Courtesy of the Metropolitan Museum of Art

ROUGH STONE IMPLEMENTS

which was not satisfactory in its original form might be sharpened by striking it against another stone. At first his attempts were so rude that it is very difficult to tell the natural flint flakes from those which man has chipped, but with many centuries of experimenting he produced knives, hatchets, and arrowheads with edges of remarkable evenness and sharpness. Before that stage was reached primitive man had taken another step ahead. He had discovered that if a sharpened bit of stone were tied very firmly to a straight stick it might be thrown at a foe from a distance. When a clever warrior invented a bow which would send the stone-tipped arrow with great force and swiftness a long distance and give it direction, he had made as great an advance over his stone-throwing ancestor as the inventor of the modern rifle has made over him.

Stone implements. While the man was inventing stone-headed spears, and bows and arrows, his wife was making from stone the implements with which she performed her household tasks. Stone knives she contrived with which to cut up the animals her husband dragged back to the cave after the hunt. A stone mill, consisting of one broad and flat stone slightly hollowed in the center and another irregular lump of rock, was invented to grind to coarse



Courtesy of the Metropolitan Museum of Art

STONE KNIVES

meal the seeds which she had gathered for her family's food. As she developed other industries she invented other tools of stone and wood and bone to use for them.

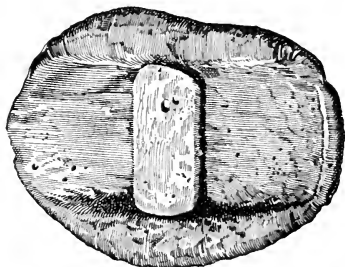
Food-getting and preserving industries. Primitive men and women were taught by many a long starving time that food must be stored up for seasons of scarcity. It was not safe to eat up all the meat brought home from the hunt before more was provided. The prudent mother cut long strips of meat and dried them in the sun. When they were quite dry and hard she sometimes pounded the meat very fine and poured over it melted fat and then packed it away in rawhide sacks. Meat preserved in this way is called pemmican.

In primitive society it is always the work of the women to pick and bring into the family larder the vegetable food which,

with the produce of fishing and the chase (provided by the men), make up the family diet. In whatever place woman's lot was cast she found such food supplied her by nature. In Asia rice offered itself; in Africa millet, tapioca, and yams; in America maize, grass seed, potatoes, and nuts. With whichever of these materials she was provided, woman worked out a group of industrial processes which are at the basis of our great food industries today.

Let us follow an Indian woman in her search for food. If she lived in the southern part of North America she learned that in the summer and fall the tall green cornstalks which grow in sunny places bore ears of golden corn.

With a roughly constructed basket of twigs or birch bark fastened to her shoulders she set out. Here and there she found wild fruit or vegetables, and these she put into her basket with the ears of corn. Upon her return to her home she separated the reward of her day's work into piles—one for im-



HAMMERSTONE AND HAMMER

mediate use and one for the winter, when there would be nothing to pick in the fields. The vegetables and fruits which were to be saved were cut up and dried in the sun. The corn was husked and dried and stored. When she was ready to use the corn she removed the kernels from the cob and ground them, and out of this meal she made cakes.

Almost everywhere in the world some kind of grain grows wild, and everywhere people have made grain their most important article of diet. For this reason the grinding of grain to meal or flour became an important industry. Two different methods of milling grain were evolved by primitive people. By one method the corn was put into a wooden mortar-shaped bowl, very much like those seen in apothecaries' shops, and pounded with a wooden pestle. The mortar was made of a short log, which was hollowed out by burning the heart and then hacking away the charred

wood with a stone scraper or hatchet. After much pounding and rubbing in this rude mortar the corn became meal of very uneven quality. By the other method of milling, two stones were used, called the hammerstone and hammer, or metate and muller. The hammerstone was a broad, flat stone slightly hollowed out in the center. The hammer was a smaller, rounded stone. The primitive miller placed the grain in the hollow of the hammerstone and rolled and rubbed it to meal. In these mills women also ground dried meat, dried fish, grass seeds, and nuts, as well as all kinds of grains.

Skin-dressing. As far as we know, the earliest clothing was made from the skins of animals. At first, no doubt, the pelts taken from rabbits, squirrels, and other small beasts were scraped and dried in the sun and fastened together for clothing. Such treatment would leave them very stiff and harsh.

The chewing method. After trying various methods of softening the skin primitive woman found that she could make it permanently flexible by chewing the flesh side in her mouth. She put in as much as she could at one time, and after chewing that to her entire satisfaction she took up the next portion of the skin and went to work on that. This method of curing skins—sometimes applied to much larger skins than that of the rabbit—remained in fashion so long that travelers within the last century have found Eskimo women still employing it.

Curing hides and pelts with the hair on. Primitive man improved both his methods of hunting and his weapons of the chase until he dared to attack large animals, such as the moose, the bear, and the buffalo. When women were offered the carcasses of these animals to use, they set to work to find a way to make the skins of service. When the skins were taken from the animal, they carried with them so much fat and membrane that they would spoil instead of drying out if they were treated as were the smaller skins. Even if a woman wished to use them with the hair on for robes or fitted clothing, she must scrape away the fat and flesh adhering to them and put them through a more elaborate curing process than the simple expedient of chewing.

In preparing a robe the pelt was first stretched out flat either on the ground or on a framework of sticks, while the women worked over it with stone or bone scrapers. By this scraping, all the fat and flesh were removed. When this was over, the skin was dried and bleached in the sun. When it was entirely dry the women went to work on it again, chipping off long shavings, with a stone and bone tool resembling an adz, until the skin was all of an even thickness. To soften the skin while this was going on, the fat and brains of the animal were rubbed onto it by hand and worked in with a smooth stone. All this was frequently done in the open so that the warmth of the sun might assist the process. The Indian women next worked the skin with a grainer (a short-handled tool resembling a chisel with a serrated edge) to soften the surface. This tool was unknown to other people, who omitted this process and went at once to the last stage in the treatment—the twisting, pulling, and rubbing of the pelt, with occasional application of water. Crude as all this seems, it produced a robe as soft as a woolen blanket, with a finish on the inside resembling chamois.

Making leather. Skins of the larger animals were used in three other forms: (1) as rawhide, (2) as tanned leather, (3) in a form much like the chamois skin of commerce. In preparing the latter the same process was employed as in curing pelts for robes, with the addition of one more step—that of removing the hair. This might be accomplished by cutting the hair and outer skin away after the pelt was dried, but before it was softened. Sometimes the hair was loosened by sweating or by the application of wood ashes and water. In the first case the pelts were rolled up, put in a warm place, and allowed to remain until the hair could be easily removed. Leather prepared in this way was used extensively for clothing.

Rawhide. The simplest skin product to prepare was the rawhide. The hides were scraped free of fat, the hair was removed, they were cut and shaped while still green, and then they were dried. Sandals, soles for moccasins, cases for carrying meat, and shields were made of this material. When the hide was dry, it became as firm as a board.

Tanning. The North American Indians never learned to tan their leather. Since rawhide absorbs moisture as readily as chamois, Indians took off their shoes when it began to rain, finding the mud more to their liking than soaked and clammy moccasins. Other primitive people found a way to meet this difficulty. They discovered that cleaned hides soaked in water in which the bark of the oak or the leaves of the sumac were lying turned a darker color and took on a firmer texture. In use this leather resisted water (although it was not waterproof) and was less subject than untanned leather to the attacks of insects or decay. This change was due to a substance known to us as tannin, which is found in many plants besides the three just mentioned. It is still used for tanning leather.

Uses of dressed skins and leather. Dressed skins were used by primitive people to make a great many articles for which we have now a variety of materials. Some Indian tribes made their homes of skins sewed together and fastened over a framework of poles much as a modern tent is made. Except in the tropical parts of the globe, primitive people used leather clothing to a great extent. The Eskimos, the majority of the Indians, the Germans of Tacitus' time, and the Roman Tacitus' own ancestors were all clad in this way. Rawhide was used for ropes and string as well as for warriors' shields, moccasins, and many other articles.

Basketry. Basket-making is one of the earliest industries practiced by mankind. And this is not strange, for nature provided raw material practically ready for manufacture. Twigs broken from the trees, dry grass, willow wands, bark that curled from the trunks of the birches—any one of these might be interlaced to form rude baskets. The birds building their nests may have played the part of instructors to the first basket-makers. However women first learned to make baskets, in the course of time two distinct types of basketry developed, depending upon the material easiest of access.

In regions where reeds were plentiful a woven basket was manufactured. Where dried grass was found in great abundance a sewed basket made of sticks or rolls of dried long grass coiled

row on row and sewed together with long-grass threads came into existence. By dyeing the material different colors, very pleasing designs were stitched into the baskets.

Uses of baskets. In those days baskets were put to many strange uses. A water-tight basket served as a kettle in which to boil food. Of course it was impossible to suspend baskets over the fire,



Courtesy of American Museum of Natural History

PRIMITIVE BASKETRY

but in that age women had nothing that would stand such treatment and were glad to make use of this awkward pot. The water and meat to be cooked were placed in the basket, and into this were thrown stones that had been heated very hot. With a sufficient number of hot stones the water could be made to boil. Bread was mixed in baskets; for that matter it is still made so among some tribes of Indians. Woman, wandering through the forest looking for raw material which she might convert into food, clothing, or articles of household use for the greater comfort of her family, carried on her shoulders her basket, in which to take home her treasures. Fish weirs, animal traps, and even shelters for human beings were made of basketwork.

The principles of manufacture developed in basket-making lie at the basis of several other arts. The many beautiful weaving stitches invented for woven baskets were applied to textiles when spinning made textiles possible. The stitches employed in sewed basketry are found in several types of lace. Strangest of all, coiled pottery is built on the same principle as the coiled basket.

Invention of pottery. Closely allied to basket-making is the art of making pottery. Probably the discovery that clay when baked in a fire becomes firm and water-tight was made by women who lined baskets with wet clay to use in their cooking. The heat of the coals which were put into the lined basket with the food to be cooked baked the clay. After this had happened many times women realized that whenever clay was heated very hot it became hard. The advantage of the pottery bowl or jar over a basket for carrying water, storing food, and a dozen other uses was very apparent. Whenever good clay was to be found from which jars and bowls could be made, and the settled habits of the people made such things of value to them, the manufacture of pottery became an important industry.

Preparation of clay. Today in making pottery one studies the chemistry of clay and mixes the proper ingredients with scientific exactness. Primitive woman used clay as she found it, and the result of her work was always a matter of uncertainty to her. Experience taught her that the fine settlements found in the bottoms of pools which formed during heavy rains made excellent foundation clay. In a dry country, where the rains came seldom to clean her material for her, she imitated the work of the rain herself. She quarried the clay from the hillsides and mixed water with it to wash out all foreign matter. To this was added some gritty substance such as sand, pulverized shells, or old pots ground fine, and the mass was kneaded with care. From the clay so prepared the articles were shaped by hand.

Decoration of pottery. Decoration of pottery took various forms. One form consisted of designs scratched in while the pottery was still soft. A second type is that found among the Mexican Indians, who model very lifelike little figures, which they

attach to their vases with a bit of wet clay. These figures sometimes form handles, but are sometimes purely ornamental. The most pleasing form of decoration to the modern eye is the third type. This consists of painted designs. Before painting, vases were smoothed down to an even surface and allowed to dry. When quite dry they were polished with a stone. The color, which consisted of fine clay—white, red, yellow, or brown—or the juice of



Courtesy of American Museum of Natural History

PRIMITIVE POTTERY

plants, was applied with a brush made of vegetable fiber. Frequently a thin wash of white or red clay was first applied to the whole jar, and on this slip, as it is called, the design was painted in other colors. These designs were either geometrical patterns or attempts at the representation of natural objects, such as animals, the plants of most economic value to the people of the district, or human figures.

Glaze. The glaze which is applied to almost all modern pottery, both for its practical value in rendering the ware water-tight

and for its decorative effect, was unknown to most primitive people; that is, primitive potters do not seem to have known how to produce a glaze, although they sometimes glazed their dishes by accident. For instance, in rubbing down a jar with a piece of gourd wet in salt water, enough salt sometimes happened to be rubbed in to give a glazed surface when the vessel was fired.

Firing pottery. When the jar had received such decoration as the potter wished to give it, it was propped up on stones, and a hot, evenly burning fire was built under and around it. By the time the fire had burned out, the jar had become hard and watertight and the decorations were baked into the surface so that they would not rub off.

Much primitive pottery is very beautiful in shape, decoration, and color. From the small, round, black, lustrous bowls to the canteens in lavender browns and the huge water jars, all possess artistic charm. This is the more wonderful when one considers that a large part of the pottery was made by the women for their own use. As those same women were skin-dressers, millers, basket-makers, and weavers, it is surprising that they attained sufficient skill in any one line to create objects of real beauty.

Baskets and pottery jars play a much less prominent part in modern life than they did among primitive people. Even leather, which is still extensively used, is relatively far less important than it was then. The making of cloth, on the other hand, has grown steadily from a minor industry to one of the greatest industries in the world. Because of its immense importance at the present time, it is worth while to trace in detail its humble beginnings in the distant past.

Cloth-making. The two varieties of cloth most in use at the present time—felted and woven fabric—were evolved by primitive people, although they were not by any means known to all tribes.

In warm climates such as the South Sea Islands, where skin clothing would be very burdensome, the natives early invented bark cloth. This was prepared in the following manner: The outer bark of a suitable tree was scraped away with a shell or bone scraper, leaving exposed a fibrous inner bark. This inner

bark was then removed, beaten slightly, dampened, and allowed to ferment. When the fermentation had gone far enough to soften the fibers properly, the mass was spread out on a smooth log and beaten with a wooden mallet. With continued beating, the fibers became firmly matted together, thus producing a fairly durable and attractive felting, on the surface of which elaborate designs could be painted.

To make woven goods is a far more difficult matter than the production of felting. If we examine a piece of cloth we shall find that it consists of threads running at right angles to each other. First of all, then, yarn or something that corresponds to it is necessary. In the second place, parallel strips of the yarn must be held extended so that the cross-threads can be woven in and out through them. All this requires much more elaborate tools and greater skill with the hands than any of the industries which we have studied so far.

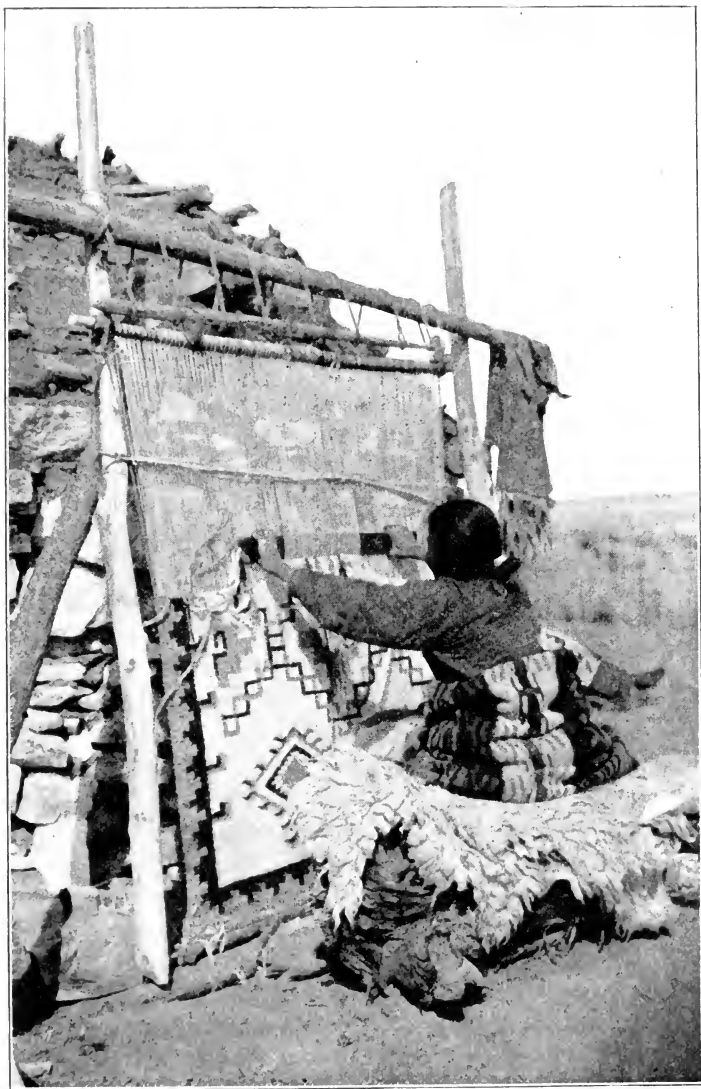
Discovery of weaving. Although in the modern process of textile-making the spinning of yarn precedes the process of weaving, it is certain that the weaving of cloth was invented before spinning. Undoubtedly the first piece of weaving was a windbreak made of a row of branches stuck into the ground with other branches woven in and out through them, or a rude basket made of the interlaced wands of the willow or of strips of bark. From this it was an easy step to the weaving of cloth from strips of fur or from dried grasses. It was a long step on the road to civilization, however, when it was discovered that such animal and vegetable fibers as the hair of goats or camels, the wool of sheep, the fluffy ball in which the cotton seeds are hidden, or the fibers in the woody stems of hemp and flax might be twisted into a thread and woven into cloth.

Cleaning and carding. Such fibers all require some cleaning before they are ready for use: the cotton seeds must be removed from the cotton; the flax and hemp must be freed from the pulpy substance which holds the fibers together in the stem of the plant; the wool and hair from animals are full of dirt and oil, which must be washed out before they are fit for use. Even when cleaned, the fibers are not ready to be spun. The fibers of both cotton and



Courtesy of American Museum of Natural History

INDIAN WOMAN SPINNING WOOL WITH PRIMITIVE SPINDLE



Courtesy of American Museum of Natural History

INDIAN WOMAN WORKING AT A PRIMITIVE LOOM

wool are so tangled and matted together that they would form a very lumpy thread if they were not separated and straightened before they were spun. The separating and straightening, or combing and carding, as it is called, was carried on principally with the fingers, though wooden combs may have been used sometimes to help out.

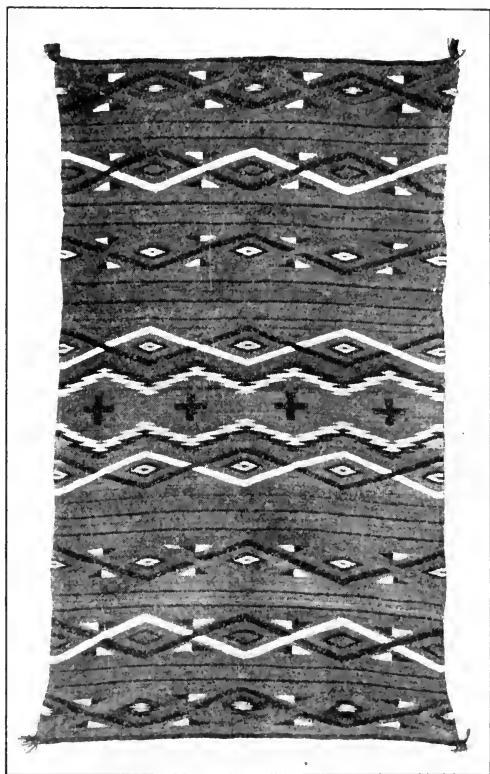
Spinning thread. When the fibers were properly cleaned and carded, it was possible to twist them between the thumb and finger into a thread. Unfortunately, in this process the thread curled up and knotted and became very unmanageable. To meet this difficulty the spinner attached a stone or stick to the finished end of the thread, which weighed it down and prevented it from kinking. Both the stone and the stick had advantages: the stick served as a spool on which to wind the thread when it became long enough to touch the ground and interfere with the spinning; on the other hand, the stone served far better as a weight, and if it were round and flat it had the additional advantage of giving an extra twist to the thread, which made it firmer than it would otherwise be. Some clever woman combined the two, driving the stick or spindle through a hole in the flat stone or spindle whorl; and here we have the spindle complete, as it has been used until modern times and as it is still used in remote parts of the world—a stick on which the thread is wound, with a piece of stone or wood fastened to it about one third of the length of the stick from one end.

Weaving. To weave thread into cloth primitive women found that they needed some arrangement for holding the lengthwise threads, or warp, out straight and firm, so that the cross-threads, or woof, might be carried in and out through them without unnecessary trouble. For this use women invented the loom. At first the loom consisted of two poles with the warp tied from one to the other. This loom was laid flat on the ground, with the poles held in place by stones, or hung from the limb of a tree. In the latter case the weight of the lower pole served to hold the warp threads in a parallel line. As women usually sat on the ground at their weaving, they chose a tree limb that would swing their loom just above the ground at a convenient distance for them to work.

Most primitive looms that are now extant are made on this principle, except that a wooden frame has taken the place of the limb of the tree. The upper pole is swung from the upper rod of the rectangular frame by ropes, and the lower pole is fastened into the side-pieces of the frame to prevent it from swaying as the work goes on. One more improvement was made. A stick was fastened by threads to every other warp thread. By pulling this stick towards her, the weaver was able to separate the alternate threads of the warp and form what is known as the shed. Through this opening the woof was carried the width of the cloth by a single movement of the arm.

Products. With such simple contrivances as the wooden spindle and hand

loom primitive people produced cloth of great excellence. In the warmer climates attention was centered on the spinning and weaving of cotton and linen. Fabric of extreme delicacy was made by some people, while others used such a heavy thread that



Courtesy of American Museum of Natural History

INDIAN BLANKET

An example of primitive weaving

their handiwork resembles nothing so much as a twilled woolen blanket. Fancy stitches were introduced to give a pattern, and colored threads were woven in to form gay borders. In colder regions wool was employed almost entirely. The products ran from narrow hair bands three inches wide and a yard and a half long, through the small, thick saddle blanket, to great robes large enough to envelop an Indian chief. By means of shaped looms, even curved edges were produced, as the Alaskan ceremonial blankets show. Most woolen textiles, much thicker than our woolen cloth, approached our rugs in appearance. Very many of them were woven in the simplest under-one, over-one weaving stitch, depending upon the use of color for their decoration. Color was obtained by using the wool of white sheep and brown sheep for white and brown, mixing the wool of the two for gray, and dyeing white wool with vegetable dyes to blue, yellow, dull red, black, and green. The designs on many blankets consisted of stripes running across the blanket. Some plaids were woven. Geometrical figures were introduced by carrying the thread of one color part way across the warp and then turning back, a device seldom employed in machine-made goods, but one in which the Indians delighted. Fancy weaving was not unknown to the North American Indians, as is evidenced by a robe discovered in a prehistoric ruin of the Southwest. This robe was woven diagonally so as to give a raised pattern.

Cave dwellings. During the hundred thousand years or more mankind took to pass through the Stone Age, periods of great heat alternated in Europe and North America with periods of intense cold. The changes of climate came very gradually, as each period was thousands of years long. As the climate varied, animal and plant life varied also. The rhinoceros and other tropical animals moved south as the ice sheet descended from the north, and their places were taken by bison and reindeer. Man remained through the changes, adapting himself as best he could to a different climate and a different food supply. When life in the open, with only intertwined branches and sticks as protection from inclement weather, became unendurable, humans turned for protection

to the caves nature had formed in the sides of the hills. These caverns had no sign "To let unfurnished" hanging out on them. On the contrary, they were very fully occupied by cave bears, cave hyenas, and birds of prey. A family or tribe in search of a home had a stiff fight ahead before it could take possession. How often the bear was victorious in those struggles we shall never know. Man at last won out, moved into his new home, and set up housekeeping. A cavern as a house left much to be desired. True, it was a protection from snow and sleet and intense cold, and an easily defended stronghold against wild beasts and tribal enemies, but it was damp and cold at best. Whenever the weather permitted, the cave dwellers gathered at the mouth of the grotto to enjoy the fresher air and the sunshine, and there they worked at stone-implement making, as the piles of chips they let drop still bear witness.

Structures of stone and brick. As the population increased, the demand for caves exceeded the supply. This difficulty was met in various ways, depending on the nature of the country in which the particular tribe in question happened to live. The first solution of the problem would be to dig out an artificial cave in the side of a hill. In localities where stone was abundant the next step was to build up walls of stone and roof over the top of the cave so constructed, with poles and sticks. Small boulders were used just as they were found, and the chinks between them were filled in with pebbles and clay. Where a soft stone was plentiful, blocks of that were cut out.

Closely akin to this type of material were sun-dried bricks. Sun-dried bricks can only be used in a hot, dry climate, such as Egypt, Mesopotamia, or our own Southwest. The construction of an adobe house will illustrate this type of architecture very well. Adobe, a sticky clay abundant in New Mexico, is mixed with chopped straw and pressed into a brick mold twenty-four inches square and six inches deep. The brick shrinks so much in drying that it is easily removed from the mold. When enough bricks have been made, the house is built by the simple process of piling up these bricks to form the four sides of the building. The walls

are frequently two feet thick. One wall is very slightly higher than the other to give a slope to the roof which will cause it to shed the rain. On top of the walls, from front to back, round logs are laid at regular intervals, and from log to log shorter sticks are placed, the whole being plastered over inside and out with brown earth and clay or else whitewashed. The great pueblos of the Southwest are made in very much this same fashion, except that where soft sandstone or tufa could be easily quarried, dressed



SPRUCE-TREE HOUSE, MESA VERDE NATIONAL PARK

After restoration by Dr. Jesse Walter Tewkes of the Smithsonian Institution

blocks of this were used in place of the adobe bricks. The pueblos are four and five stories high, and the larger of them contain one to two hundred rooms, accommodating eighty or ninety families, to judge by the number of living rooms with fireplaces in them. This may seem a very primitive form of construction to the modern man, accustomed as he is to steel-frame apartments, elevators, and telephones, but it was an immense advance over a cave dwelling. The men and women who first made and lived in such houses were standing in the dawn of civilization, and up to the present time many of the people of the earth have not advanced beyond that point.

In the tropical parts of the world, where no ice age came down upon humankind to drive them to caves, and in regions where there are no caves the basketwork of boughs which primitive people early learned to put up as protection against the intense glare of the sun and storms was the progenitor of the later types of buildings. The bamboo house of the Philippines is an example in point. Here bamboo rods are used, fastened onto a framework of poles. The Plains Indians, who depended almost entirely upon hunting for the necessities of life, developed the tepee, a framework of poles covered with skins of animals carefully pieced together.

The lake dwellings of Switzerland—frame structures with thatched roofs erected on piles in the shallow shore waters of the lakes—were a somewhat more elaborate development of this type, as was also the wattle house of medieval England. The frame houses found so commonly in the suburban and country districts of the United States are only larger and more substantially built lake dwellings placed on land. In fact, as far as building is concerned, we have added only two great inventions to what our primitive ancestors taught us—the principle of the arch and the steel frame for stone or brick buildings.

Ornaments. Although we regard jewelry as the last thing to buy after all our more prosaic wants have been provided for, primitive man made for himself the equivalent of jewelry long before he and his womenfolk had evolved comfortable clothes and a reliable food supply. Holes were bored in colored stones, such as the turquoise, that they might be strung on sinew threads for collars and earrings. Indians of the New York and New England coast worked shells into beads known as wampum. Feathers fastened into leather bands formed the gorgeous war bonnets of the Western Indians. Dyed quills were worked in gay patterns on leather gowns and moccasins. In all this work the uncivilized races have shown great appreciation of the beautiful, although their means of expression was the simplest and rudest possible.

Conveyances. As soon as man had household goods, he required some means of carrying these goods with him in his frequent journeyings in pursuit of his ever-shifting food supply. A basket

fastened to his (or, much more likely, his wife's) shoulders was the prehistoric ancestor of our modern freight car. Indians who had tamed dogs fastened tent poles and tent covers to the dog's back by means of a triangular framework of poles laced together with rawhide, known as a travois. In the neighborhood of streams or quiet bays and lakes man early invented some type of boat. In one place the primitive type of boat was a log hacked down with a stone hatchet and hollowed out by burning the center of the log. The burning had to be done with the greatest caution or the boat would be ruined. The fire was put out every little while and the charred part scraped off. It required days of this scraping and burning before the desired shape and dimensions were attained. Bark and skin canoes met the requirements of shallow streams. Rafts made entirely of logs, or of logs buoyed up by the inflated skins of animals, were used for crossing rivers where there was no ford and for descending streams. People living along the seashore dared not venture beyond the quiet waters of the bays along their coast in any of these crafts, which were all either too frail or too clumsy to stand the buffeting of sea waves. Until they contrived to build strong-framed boats, covered with planks, they were unable to go to sea. This was impossible until men had learned to cut boards from logs, and by the time they had learned to do that they were entering upon a more advanced industrial system, so that we can safely say that ocean travel was unknown among primitive people.

Commerce. *Limitations.* All through the primitive period commerce attained very little importance, owing to several causes. The first and most active cause was the hostility felt by one tribe for another. The second was the state of industry. When each family is producing just enough of everything for its own use, there is no surplus to exchange. As a division of labor gradually came in, under which system one group of people specialized in the manufacture of pottery, for instance, and another devoted themselves to chipping arrowheads, exchange between members of a tribe, or one tribe with another, became possible. This change did not take place to any extent except where one tribe was especially well

situated to obtain a superior quality of clay or flint. Another obstacle to carrying on trade was the great cost of transportation in time, labor, and life. No roads existed, unless the Indian trails may be called roads. Conveyances were little more than baskets carried on the backs of people or dogs. Boats were few and insecure, frequently upsetting and sending everything they contained to the bottom. Danger from the attacks of robbers and hostile tribes was very real.

When one considers the obstacles to commerce, one is tempted to conclude that it was impossible for any commerce to exist under such conditions. Unfortunately for any such easy solution, proof remains to us that there was commerce of a sort even against such odds. For instance, implements are found hundreds of miles from the places where the stone of which they are made exists.

Although commerce existed, buying and selling in the modern sense did not, for without money it is impossible. Primitive exchange was effected in very early times by means of barter ; that is, one article was exchanged for another. As exchanging goods became more common some one commodity, such as wampum, became so generally desired that anyone having goods to sell was ready to take that commodity in exchange for them, knowing that when he was ready to buy something himself he could easily use the wampum to purchase it. In this way wampum became a medium of exchange, serving as the gold coins, or their paper equivalents, which we use in our own commercial transactions.

Markets. In order that traders might venture among other tribes to exchange their wares, market places were established. These market places were gathering places for all who wished to do business. Here the ordinary rule of "kill the stranger on sight" was suspended. Some attempt at keeping order was made, and disputes were settled in less bloody ways than at the point of the sword. The market, however, was one of those developments among primitive people which marked the approach of a new era. It is found only among the advanced savages.

Characteristics of primitive industry. The most striking characteristic of primitive industry is the extreme slowness with which improvements were made. Men chipped stone implements of the rough-stone variety for many thousand years before they discovered how to polish down their knives and axes to a straight, sharp edge. For as long a period pottery of the roughest, undecorated type was all that mankind produced. From the time when men first began to make things, to the time when the most advanced races entered upon the pastoral age, fifty to a hundred thousand years had passed. In all that time men continued to depend upon wild plants and wild animals for their food and clothing. Not until the very end of the period did men tame the dog, the sheep, and the ox, and plant grains for their food. From the close of the primitive period to the present day is scarcely ten thousand years. Since 1750 (less than two hundred years ago) greater changes have taken place in industry, with the invention of machinery, than occurred in the whole primitive period.

There are many reasons for this slow development. At the beginning of the primitive period men had little more intelligence than the brutes around them. It was exceedingly difficult for them to think. Very naturally the younger generation did things exactly as their elders had done them, if it were possible. Sometimes a change in climate or the disappearance of some kind of game upon which they had depended, or some other alteration in the conditions of their life, forced them to readapt themselves. And in such adaptations to new conditions lay progress then as now. Occasionally there appeared in a tribe a man or woman with more intelligence than the rest, who applied that intelligence to making more satisfactory food, clothing, shelter, or tools. So great was the conservatism of primitive people that for fear of offending the gods such a one might be obliged to give up the new way of working and conform to the custom of the tribe. Even if the new way were adopted, the knowledge of it might not spread beyond that particular tribe for hundreds of years. There were no books or newspapers or even a written language through which knowledge could be spread. Commerce, which has so often served to carry new ideas

from place to place, was in its feeble infancy. When we take into account the slight intelligence possessed by primitive people, their intense conservatism, and the difficulty of disseminating knowledge, it is hardly surprising that progress was exceedingly slow.

A second characteristic of the primitive period is the extensive use of stone for weapons and tools. In fact, the use of stone was so general that the period is usually called the stone age. At first glance it may seem inconsistent to call this the stone age, any more than the skin age or the wild-food age or the clay age (for each of these materials played a large part in the industry of the time), but when we look a little closer into the situation the reason for the name becomes apparent. The tools of the people were made of stone, and the tools in use will at any time determine the methods to be employed in industry and the quality of the product. Therefore the stone tool of primitive man limited his industrial development far more than the use of skins or clay.

3 A third characteristic of the industry of this period is that practically all goods were consumed by the people who produced them. Each man hunted, fished, chipped stone weapons, and built a shelter for himself and his family, while his wife and daughters prepared food, clothing, and household utensils for the family group. Among some primitive people, it is true, the whole tribe went hunting together, but, after all, the tribe is simply an enlarged family. Only at the end of the period did one person become an expert in one industry, produce more than he needed for his own use, and trade the surplus for other things which someone else produced better than he. Even then it was the very rare exception rather than the general rule when an individual or a tribe specialized in one line of production. Production for the direct use of the producer has advantages. What we make for ourselves we make as well as we know how, for we ourselves are going to suffer from slipshod work. On the other hand, this system of production prevents any rapid advance in industry. That a Jack-of-all-trades is a master of none held as true then as it does now, and it is only when a man has mastered what his age has of knowledge that he can make any great contribution to progress.

In spite of the difficulties which they had to face, primitive men and women did much for which we owe them gratitude. Besides discovering the fundamental processes of many of our industries, they developed from creatures careless of the future, without memory, and strongly disinclined to work, into fairly industrious and provident beings.

TOPICS FOR DISCUSSION

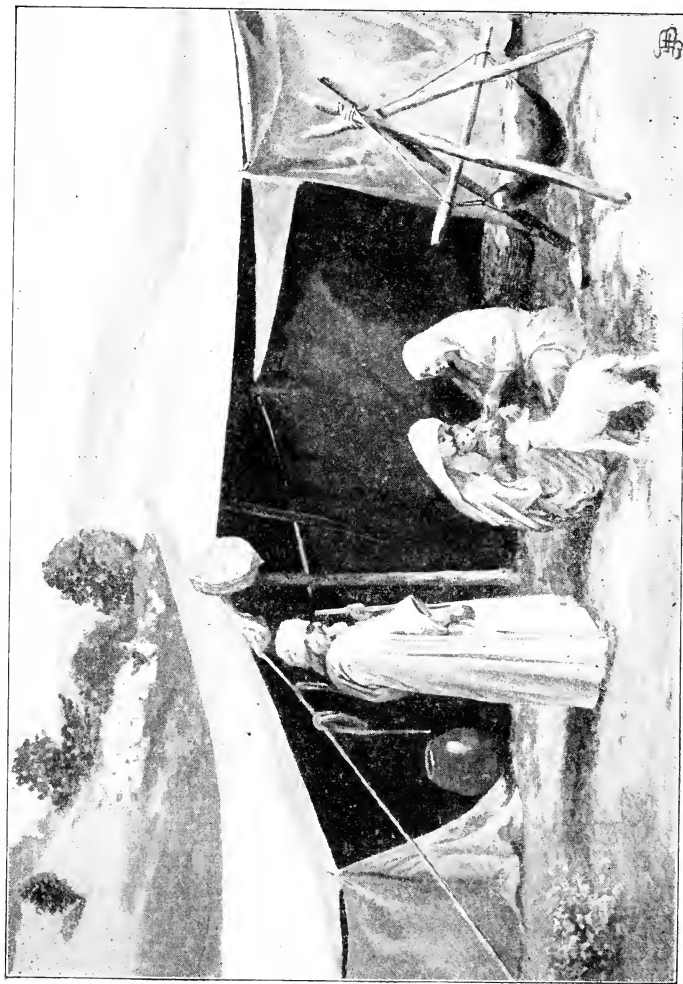
1. Compare the food of a primitive household with that of a modern household in regard to (1) variety; (2) preserving methods; (3) source; (4) methods of cooking. To what are the differences due?
2. Perform the following operations:
 - a. Cook a meal with an earthen jar, a basket, and hot stones.
 - b. Make a loom and weave three inches of cloth with colored worsted.
 - c. Make a clay jar.
 - d. Chip a stone arrowhead.
3. From your experience with these experiments should you say that a primitive craftsman required more or less skill than a modern factory worker? more or less strength?
4. Give the advantages enjoyed by a primitive craftsman over a twentieth-century factory worker.
5. What advantages has the factory worker over his primitive ancestor?
6. How far are these advantages the result of the development of industry and commerce?
7. Name three primitive peoples of whom you have read. How did they differ? How far were these differences due to the geography of the countries in which they lived?

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¹ An asterisk inserted before a reference indicates that the book is for special reading for high-school students.



TENT LIFE IN THE PASTORAL AGE

CHAPTER II

THE PASTORAL STAGE OF INDUSTRY

Although some of the peoples of the earth passed immediately from the primitive stage to the agricultural system of industry, those that lived in open, grassy country, where animals could graze, went into the pastoral stage before they became farmers. The pastoral stage is, as its name implies, a period when pasturing flocks was the chief business of the people. In fact, it was so much the fundamental industry of the age that the economic life of the time was largely determined by it. Spinning and weaving, which had been minor arts of comparatively little importance, rose to great prominence with the abundant supply of wool which the animals provided. As the seasons change or pastures are exhausted the shepherd must go with his charges where the grass is green. When a whole tribe was engaged in pasturing animals, the whole people moved with the seasons. Tents which could be pitched or struck in an hour were the homes of all. Even religious worship was conducted on the hillside, under the open sky. The development of building had ceased. With the pastoral age what little agriculture the primitive people had indulged in rather declined than improved. There was little encouragement to plant with care crops which another might reap, and only the most superficial attempt was made to raise a little grain in the summer camping place. On the other hand, the tanning of skins and the manufacture of cheese and various other animal industries reached a high state of perfection, along with the manufacture of textiles. Every branch of industry was influenced by the flocks and their care.

How the pastoral age came about. The transition from primitive industry to pastoral life was accomplished only through a series of slow changes. Apparently hunting tribes were the first to attempt to tame animals. And their work began with the taming

of the dog as a pet and a companion on the hunt. Chickens and birds were also tamed and kept about the hunter's camp as pets. Then the animals which were the most valued game of the region, such as sheep, alpacas, reindeer, cattle, or llamas, were domesticated. After killing the parent animal the hunter may have brought home the young ones to amuse his children. In time, as the wild animals became less numerous, the value of the domestic animals became apparent, and what had been but a game became a serious business. Flocks and herds were systematically raised and cared for, and the life of the people took on a new face, as we have seen.

Sources of information in regard to the pastoral age. What we know of the industries of the pastoral age comes from three sources. First, there are the remains of early races, among them the Incas of Peru, a people who relied on flocks of alpacas for the wool for their clothing and on herds of llamas to supply wool and furnish them with pack animals. Second, there are living at the present time some backward races in the pastoral stage, such as the Siberian tribes, who live on their flocks of reindeer, and the sheep-raising Indians of the Southwest. Third, and most interesting of all, there are the traditions of the age of shepherds, which we find embedded in the writings of a later time or in the customs of peoples. The religious ceremonies of the Romans preserved many old customs that date from the time when flocks and herds were the principal wealth, such as the sacrifice of lambs and kids to the gods and the use of milk in sacred rites. Greek legend and story are full of references to a condition of society when most men were shepherds and herdsmen. Most valuable of all this type of material are the stories of the Hebrew patriarchs, Abraham and Jacob, who lived a pastoral life until famine drove them into Egypt, a more civilized country, where agriculture was already systematically carried on.

Raw materials. From a study of these sources we find that the industry of the pastoral age differs from the industry of the primitive period in several respects. First of all, the supply of raw material was more varied and more abundant. There was a steady

supply of meat for food, or skins for clothing, and of wool for woven cloth. Milk from reindeer, goats, or cows helped to vary a monotonous diet and, in the form of butter or cheese, became a valuable product. The softer metals were mined and made into ornaments, implements, and weapons. We read of gold earrings, bracelets of gold and silver, and huge silver buckles. Knives and other implements of this age made of wrought copper or a combination of tin and copper, known as bronze, are found.

Products. During the pastoral period products showed little advance over the products of the primitive period. Skins and hides were cleaned and dressed and converted into tent coverings, saddles, shoes, etc. Thread was spun, dyed, and woven into cloth. Pottery was manufactured for household use. In the manufacture of weapons and implements stone was still extensively employed, although the more efficient type of swords and knives were occasionally constructed of copper or bronze.

Labor. Although the products of the pastoral period show only a comparatively slight improvement, and the implements and processes exhibit even less change, a marked advance was made in labor. Steady, systematic work on the part of men was required in the new life. In place of extreme, spasmodic effort at the time of the hunts and war expeditions, patient labor, season after season, was necessary. Cattle had to be guarded from robbers and wolves day and night, the young cared for in stormy weather, and flocks protected from disease. Skin-dressing and the manufacture of leather goods, which had been largely the work of the women in an earlier age, were taken over by the men, and the women were thus left free to spin and weave and perform the numerous other household duties which made up much of the industry of the day. Men and women of all classes performed the humblest tasks. Jacob and his sons tended flocks, and Rebecca watered the camels of Abraham's servant, and the daughter of a Greek king went out with her maidens to do the family washing. But at the same time the value of slaves to relieve their masters of the rougher work was becoming apparent. Instead of slaughtering captives taken in war, as had been the custom formerly,

their captors now reduced them to slavery. The change was an improvement both morally and economically. The labor of these captives helped to increase the wealth in the world, and slavery, with the hope of escape, was better than death.

Commerce. In the pastoral stage but little trade existed. Metals and metal goods were traded from tribe to tribe and bartered for slaves or cattle, but beyond this almost no exchange of goods took place. This is hardly to be wondered at, for the transportation of goods was both difficult and unsafe, and people in this stage of development had acquired few wants that their own flocks did not supply. The story of Joseph illustrates the trade of this type very well. In the first part of the story Joseph's brothers traded Joseph for metal—silver, in this case. Later, when famine overtook these same brothers, they were obliged to go down into the agricultural country of Egypt to obtain grain in exchange for the gold and silver which they had accumulated. Although some translations of the Bible call this gold and silver "money," it was simply lumps of metal and not money in the modern sense.

Characteristics of the pastoral period. The most striking characteristic of the pastoral period was the dependence of economic life upon the raising of flocks and herds. This made possible a considerable growth in the manufacture of woolen cloth and leather goods. At the same time it compelled the continuance of the nomadic life which had been customary with primitive hunting tribes. A second characteristic was the use of some of the softer metals, such as gold, silver, copper, and tin, which marks off this period from the stone age, when metals were unknown. Last but not least in importance, men were beginning to share with the women in the continuous and often monotonous work of raising and preparing food and clothing. The father was taking a far larger share than formerly in providing for the family. Man had at last a steady job, and a sense of responsibility toward his job was awakening. With this awakening sense of responsibility the value of slaves became apparent and slavery was introduced. Such changes in the labor system made for an increase in production and consequently greater comfort in daily life.

TOPICS FOR DISCUSSION

1. From the Old Testament stories of Abraham, Isaac, Jacob, and Joseph make a list of the products of industry in the pastoral age.
2. How was trade carried on?
3. Contrast the life of Jacob and his family (shepherds) with the life of the Egyptians (an agricultural people) as shown in the story of Joseph.
4. How did the occupations of Joseph and his descendants change in Egypt?

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This is an opportunity to teach the use of source material by utilizing the Bible for concrete illustrations.

CHAPTER III

EARLY AGRICULTURAL STAGE OF INDUSTRY

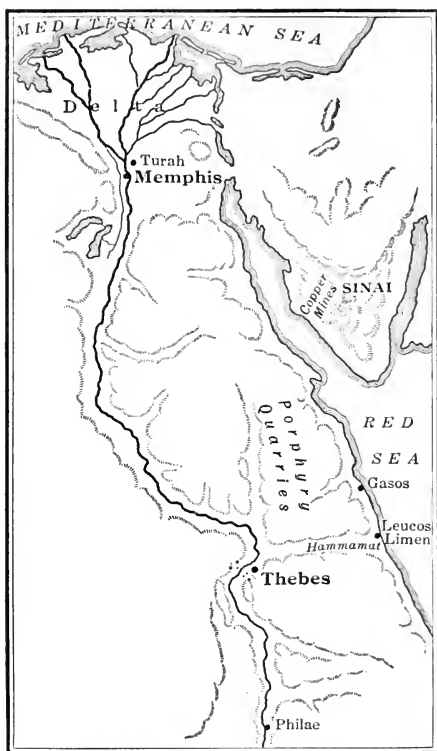
While some peoples in remote parts of the earth are still depending upon their flocks and herds for food, clothing, and shelter, most branches of the human race have evolved more efficient means of supplying their wants. As much as eight or ten thousand years ago one branch of the human family discovered that a settled cultivation of the soil would give them a more comfortable living than hunting their food. This people lived in Egypt. In order to understand why this discovery was made so much earlier here than in Europe or North America, we must know something of the physiography of the country.

Physiography of Egypt. Across the northern part of Africa stretches a wide, sandy waste—the Sahara Desert. Along the northern edge of the desert is a narrow fringe of fertile land which is watered by the moisture from the Mediterranean, on which it borders. On the eastern end the desert is cut from north to south by the valley of the Nile. The several branches of the Nile rise in the central part of Africa and join while the stream is still more than a thousand miles from its mouth. For over four hundred miles it flows through the ancient countries of Ethiopia and Nubia. In this distance there are six rapids or cataracts which impede the navigation of the river, although they do not bar passage to the skillful boatman. At the last cataract, as one descends the river, Egypt begins. From this point to within a hundred miles of the Mediterranean, the Nile flows through a valley which averages only eight miles in width. For most of this distance on either side rise abrupt, rocky cliffs, bare of vegetation, up which one climbs to the desert. The low lands along the river are covered by the muddy waters of the stream in August and September at the time of the inundation, but the rest of the year they are vivid

with the growing or ripening crops. For the last hundred miles of its course the stream divides into three or four parts which spread out fanwise as they descend to the sea. This vast triangle of low-lying rich country is known as the Delta, or Lower Egypt. Here, too, the river covers the land yearly with water carrying a rich mud which makes the soil so fertile that it yields three or four crops in a season. If it were not for the moisture which the land soaks up at the time of the annual overflow, Egypt would be a barren desert, for rain seldom falls more than once in a year. The air is clear and bright with sunshine that dazzles the eye. In winter the climate is pleasantly warm, in summer intensely hot.

Native animals and plants. Long before history begins, many animals and plants had been imported into the country from the East. Wheat and barley, cattle and

horses, all were brought from the Tigris-Euphrates valley—the horse well on in historic times. Before such importations took



MAP OF EGYPT

At Turah were fine white limestone quarries. Stone was quarried here for the Pyramids and for statues. Memphis was an early capital and Thebes a later capital. In the valley of Hammamat were located quarries of black granite. Leucos Limen was a place from which expeditions started for Sinai and the

Land of Punt

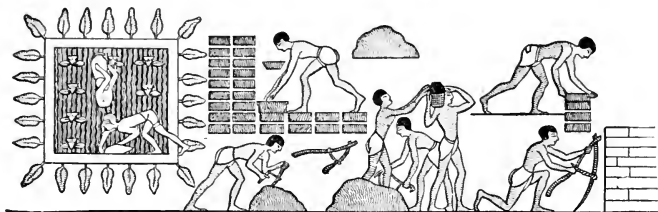
place the country teemed with animal and vegetable life. Fish abounded, and water birds, and water plants. Among these plants were the lotus, from the seeds of which meal for bread was made; and the papyrus reed, whose tender shoots were eaten as we eat asparagus, and whose matured stalks, in historic times, were manufactured into the cheapest and best paper known to the ancient world. In the less marshy places beans, peas, lentils, onions, and other vegetables grew wild. On the edge of the desert wild animals such as the lion and the gazelle offered sport to the hunter.

Transition from the pastoral to the agricultural stage. It is not difficult to imagine what happened when tribes of shepherds found their way into such a land as this. The rich pastures led to a rapid increase in the size of their flocks. And this in turn, by furnishing them with a more abundant food supply, brought about a rapid growth in population in spite of the wars which the shepherds doubtless waged against the primitive peoples whose hunting grounds they were appropriating for their sheep and cattle. More mouths to feed brought them face to face with the old problem of increasing the food supply. Each harvest their tiny patches of garden silently held out to them the answer to the problem in the hundredfold yield of grain. An acre or so planted and cared for would furnish more food for man and beast than ten times that land devoted to pasture.

As soon as their grainfields assumed an important place in their household economy the disadvantages of breaking up and planting a fresh strip each year became apparent. A dike built to keep the first flood of the river from their ripening grain, or a ditch dug to carry water from the river to the thirsty fields which baked for two thirds of the year under a cloudless sky, greatly improved the crops and were too good to leave behind when wandering time came. Even when the advisability of cultivating the same fields each season became apparent, flocks and herds continued to be an important part of the wealth of the tribe, but their numbers were reduced to such as could be fed on the pastures close to the farm lands of the tribe or sent north into the Delta, which long remained uncultivated. In time the emphasis definitely shifted

from the animal products to farm products. Then industry, commerce, and all human relationships were reorganized upon the new basis.

Changes accompanying the change in the basic industry. The most striking change which the new order brought about was this, that men cultivated the same fields, lived in the same houses, and were conditioned by the same physical and human surroundings year after year and generation after generation. All this had vastly important effects upon their life. First of all, land which had been as free to all as air or sunshine became first the property of the tribe as a whole and then the private possession of



BRICK-MAKING AND BUILDING

the individual members of the tribe. Secondly, all the industries which had been practiced in a rude way in the pastoral age, such as textile-making, metal work, leather-dressing, pottery-making, and the like, advanced with amazing rapidity. Thirdly, new industries—such as stonecutting, building in stone, wood, and brick (with all that this implies), paper-making, glassmaking, the manufacture of incense, cosmetics, and many others—came into existence.

Along with these industrial changes, in some cases making them possible, went the growth of local commerce and the development of towns about the trading centers which this commerce called into being. Out of a more complicated set of relationships came the need for a system of writing, and, with the need, its fulfillment. The invention of writing brought the invention of paper and pens, the preservation of records, and the more sure transmission of the knowledge of one generation to another.

How great a transformation was wrought in the political and intellectual life of the people it is beyond our province to discuss. Needless to say, such an empire as existed in Egypt six thousand years ago would have been impossible if Egypt had been inhabited by a race still in the primitive or the pastoral stage of development.

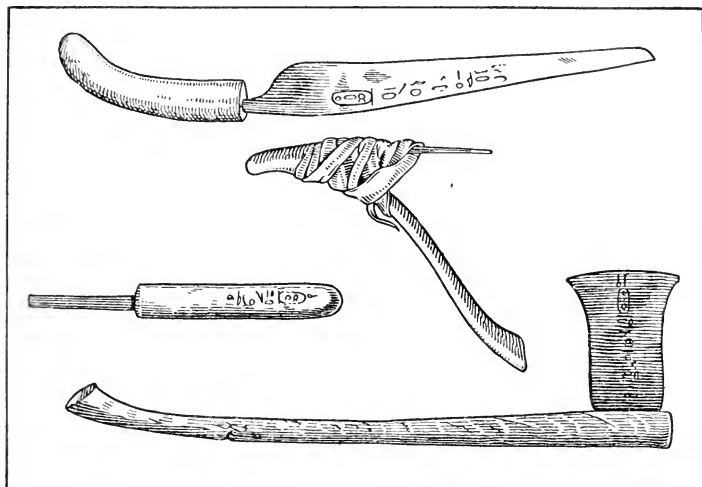
Agriculture. By far the most important industry in Egypt in ancient times, as through all the ages, was the cultivation of the soil. At the beginning of written history that industry depended, as it does today, upon the overflow of the Nile regulated and controlled by a system of dikes and ditches. At first Egypt was divided into thirty or forty settlements, each independent of the others and each attempting to cope with the river by itself. The folly of this arrangement soon became apparent. Independent settlements were constantly quarreling with each other. Moreover, to dike the river properly a single unified system throughout the valley was necessary.

Quite naturally the political union of all Egypt under Menes and the formation of a national irrigation system went hand in hand. Dikes were built along the bank to keep the rising waters from destroying the crops which were still growing in the fields when the inundation began. When the flood approached its height the sluices were opened, and the muddy water spreading over the land soaked it full of moisture and deposited upon it a thin layer of rich mud. When the river returned to its bed the irrigation canals, which were dug at right angles to the river, brought water to the fields. If the river sank below the mouths of these ditches the water was lifted by dipping it up in buckets attached to a long well sweep. With such watering and fertilizing under simple, even rude, methods of cultivation, the land produced three or four crops in a season and fed a larger population than had ever been gathered in such a small space before.

Ownership of the land. From the hands of the tribes a considerable part of the land passed to the sovereign of Egypt, the Pharaoh. Another large part went to the nobles, who were probably descendants of the chieftains of the tribes. Still other districts were held by priests on behalf of the gods. The rest

was owned in small lots by freemen. In later times, certainly, the greater part of the country consisted of the great estates owned by a few, on which lived and worked peasants and slaves. The peasants seem to have farmed small plots of land and paid tribute in kind to the lord.

Labor employed in agriculture. The large amount of slave or semifree labor employed upon the large estates was due in part



ANCIENT EGYPTIAN AX, CHISEL, AND ADZ

After Erman

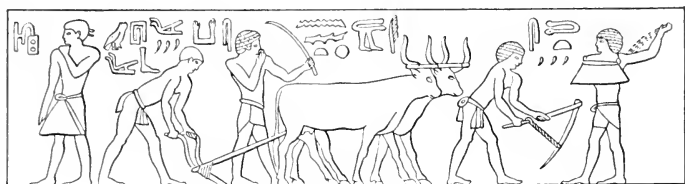
to the fact that the supply of slaves was abundant in that warlike age. The first slaves may have been the original inhabitants of the valley. Wars or raids on neighboring settlements served to keep up the supply. When Egypt became more civilized, or at least less warlike, slaves were recruited by purchasing captives taken by less civilized peoples. That the lot of these slaves was hard we can scarcely doubt. Rude shelter, poor food, long hours of labor, and the whip of the overseer were their portion. In spite of these evils the institution of slavery rendered two services in the development of industry. First, it helped to change a

slightly civilized race, in the mass of whom the roving or tramp instinct was still strong, into beings capable of sustained effort. In the second place, slaves produced more than they consumed. This surplus supported other men who devoted themselves to the production of works of art in the form of exquisite furniture, jewelry, and the like, as well as statues, wall paintings, tombs, temples, palaces, ocean-going ships, and works of literature, all of which involved a great increase in industrial skill as well as a growth in art.

Tools. Neither the slave nor the master on the large plantations nor the peasant on his little farm showed much ingenuity in fashioning better tools for himself than those employed in earlier ages. Stone blades continued in use for thousands of years after bronze became known. This may have been due to the greater cheapness of the stone implement over the more efficient metal tool, but it is quite as likely due to the excessive conservatism which marks man in his early stages of growth. A short-handled hoe with a stone or metal blade, a digging stick (which became a clumsy wooden plow with the introduction of oxen), a short-handled sickle, and shallow baskets for winnowing grain made up the tool equipment of the average farmer.

Farm animals. In performing the labor involved in the cultivation of the soil, the farmer pressed into service the animals which he raised primarily for other purposes. From earliest times goats were raised in Egypt for their milk, and sheep for their wool. Herds of half-tamed gazelles and hogs were kept for their meat. In prehistoric times cattle and oxen were unknown in Egypt, but when they were introduced they took an important place in farm economy, the cattle supplying milk, meat, and leather, and the oxen drawing plows. Asses used as pack animals furnished the only means of transporting goods overland until the Hyksos, conquerors of the Early Empire in 1800 B.C., introduced the horse. When the Hyksos were driven out, some two hundred years later, the horse remained. For many years horses were used principally to draw war chariots, and asses continued to be the usual beast of burden.

Methods. Let us take the methods employed in raising and preparing wheat and barley for the mill to illustrate the way in which the animals were drawn into the farm work. The fields, still moist from the overflow of the Nile, were scratched a little with a stick or, in later times, plowed before the seeds were sown. After the sowing the animals were driven over the field to trample the grain into the earth. When harvest time came the laborers cut the grain with a short-handled sickle. The ears of grain were carried in great baskets to a hard-beaten bit of ground, where they were spread out to be trampled upon by the animals. Here the donkeys or cattle played the part of a threshing-machine.



PLOWING, HOEING, AND SOWING

After the straw (from which the hoofs of the animals had set free the grain and chaff) was gathered up and carried away, the grain and chaff were taken up in large, shallow baskets and tossed in the air. The wind carried off the light chaff, and the grain fell back into the basket. When this process was completed the grain was ready to be ground in the primitive stone mill.

Products. Besides the wheat, barley, milk, wool, meat, and hides which have been mentioned, the Egyptian farmer raised beans, peas, lentils, onions, grapes, olives, and dates. Flax for the manufacture of linen cloth was also grown.

Other extractive industries. *Stone quarrying.* Although the farmer produced a large part of the raw materials used in the other industries, he did not produce all, by any means. Great quantities of stone were quarried in the cliffs which for many miles inclosed the Nile valley. Much of this stone was used in the location where it was produced. Some of the rarer varieties

were carried hundreds of miles in spite of the lack of all means of transportation except rough oxcarts and boats of the simplest construction. For humbler purposes, such as workmen's huts, the stone was roughly hewn in small blocks, but for the temples and royal tombs the blocks were frequently of enormous size and so carefully worked that they fitted together without a visible seam.

To produce fit stones for building, two steps are necessary. First, the block must be cut away from the mass of which it forms a part, and, secondly, the block when freed must be shaped accurately and the surface smoothed. The first was accomplished by leveling off the face of the stone and then cutting a trench into the rock above the block which had been laid off, on each end of it, and below it. In cutting small limestone blocks this trench was only wide enough for the arm to pass, but for large blocks it was wide enough to permit a workman to walk in. When the trenches had reached a sufficient depth a row of holes was drilled along the line of the back face of the block, dry wood was hammered into them, and water was poured onto the end of the wooden peg. As the wood absorbed the water, it swelled and split away the block. The second step was comparatively simple. With his hammer and chisel or his adz the stonemason worked the stone to the required shape and smoothness of surface.

Metals. To the ancient Egyptian the mountains yielded up other valuable raw materials besides stone. Iron, the very bone and core of modern material civilization, was found in only very small quantities. On the other hand, copper was mined extensively in the Sinai Peninsula and, at first in its pure state and later in the form of bronze (copper mixed with a small quantity of tin), supplied the material for tools and weapons. Both in Sinai and Nubia, districts early conquered and long retained by the Egyptian rulers, gold was found.

The gold mines, as well as some of the other mines and quarries, were owned by the king, guarded by royal troops, managed by royal officials, and worked by the slaves or servants of the monarch. It is probable that no one but the king had sufficient capital to carry on such an expensive and difficult

enterprise as the exploitation of these mines, located, as many of them were, in desert regions far from supplies of labor, food, and sometimes even water. The king was not a capitalist in the modern conception of the term. He commanded neither currency nor credit. Government bonds were unknown. And no one had thought of making up lumps of gold and silver of a certain fixed weight and purity and stamping them with the government seal. Gold was still bartered in just the same way as were hides and grain. The king and a few of his nobles were capitalists only in the sense that they had foodstuffs, cattle, and clothing from their estates over and above the needs of their households. Much of this wealth was consumed in quite unproductive ways. The king spent his surplus, especially that which came to him in the form of tribute from conquered peoples, on the construction of vast temples to his gods. Both the king and his nobles built enormous tombs and provided themselves with elaborate jewelry and household goods. Only a small part of the surplus wealth of this fat land was put into the production of more wealth. In the Nubian gold mines this was done. Here the king set to work his slaves (captives in war), fed them with the grain from his storehouses, and clothed them, as far as they were clothed at all, with the cloth paid him as taxes by the peasants. When so employed the slaves, grain, and cloth were capital.

The method of mining gold in Nubia as described by Diodorus may be taken as typical of early mining methods in general. In this region the gold was found in veins of quartz which ran deep into the mountains. Fires were built against the quartz, and when the action of the fire had rendered the quartz brittle the rock was chipped away with metal picks. The pieces of rock so obtained were first crushed to bits in stone mortars and then pounded to dust in hand mills. This dust was washed so that the lighter particles of stone and dirt which it contained might be carried away. It was possible, then, to pick out the shining bits of gold. The process was completed by smelting this gold dust in clay pots and thus purifying it and reducing it to a condition in which it might be shaped into rings, in which form it was usually traded.

Household industries. Turning from the extractive industries of farming and mining to the manufacture of clothing, food, and household furniture, weapons, tools, and the like, we find two different systems of production existing side by side. The oldest of these, dating from primitive times, is the household system of industry, the other the handicraft system. Under the first the raw materials which agriculture, grazing, or mining provided to a family group were worked up in the household by members of the household—servants and slaves as well as members of the family being included under this term—into finished goods which were consumed by the group which had produced them. Under the handicraft system articles were manufactured by specialists, who worked up the raw material of others for pay or who bought their own supplies and made articles for sale. Probably nine tenths of all the goods consumed in Egypt were manufactured under the former system, but to the latter we owe the great advance made by the Egyptians in the crafts.

The household system of industry in its simplest form is best illustrated by the life on the peasant's little farm. Here his wife and children ground to flour the grain he raised, kneaded it into cakes, and baked it. They cleaned, combed, spun, and wove the flax which his farm provided. Out of the cloth so manufactured they fashioned the simple garments of the family. The farmer and his sons dressed the skins of his animals to use for sandals, water carriers, etc. In the respite from farm work which the inundation afforded they constructed simple wooden furniture and such tools as required no metal. So carried on, industry advanced but slowly. In thousands of years the Egyptian peasant made little progress over his primitive ancestor in any industry except farming. As long as he remained a Jack-of-all-trades he could never become a master of one.

Households of the great. In the households of the wealthy conditions were very different. And here it was that the transition from the household to the handicraft system was accomplished, as we shall see. Greatest of all these households was that of Pharaoh. His household, like that of his great nobles, was a village

in itself. The buildings on these great estates consisted not only of the dwellings of the lord and his numerous officials and servants but also of countless granaries, storehouses, and animal inclosures. Here was brought the tribute of the peasants at harvest time, as well as the produce from the lands worked by slave labor. Before the scribe, who stood, tablet in hand, the grain was measured out and poured into the granaries. Geese, cattle, and donkeys were presented to the lord or his representatives. Leather, fruit, beer, wine,—in fact, everything that the countryside yielded,—found its way to the master's house.

Immediately it becomes evident that the entire time of one man might easily be occupied in the simple duty of washing and bleaching the linens. Another might grind grain from morning to night every day in the year to keep busy the bakers who provided bread for the officials, scribes, and workers who made up the household. How far this division of labor proceeded is evidenced by the following list of the attendants of the king. Besides the higher officials, such as the commander of the troops, architects, governors, and the like, we find mention made of barbers and hairdressers (who made and put on the black or blue wigs so fashionable among the Egyptians), manicurists, perfumers (who prepared the scented oils and rouge), shoemakers, belt-makers, tailors, laundresses, jewelers, musicians, singers, dancers, buffoons, dwarfs, head cooks, butlers, pastry cooks, fishmongers, etc., in addition to the agricultural laborers, herdsmen, fishermen, miners, boatmen, and the like.

Just as soon as a workman confined himself to making wigs, for instance, several changes came about in his economic life. First, and most important of all for the development of the crafts, he became so skillful, because of constantly repeating the same operations, that he made better wigs than had ever been made before and sometimes invented improved tools and more effective methods, all of which was handed down to his sons and apprentices. Secondly, the wig-maker became dependent upon others for the necessities of life for himself and his family. He produced many more wigs than his family could consume, and with this

surplus he must obtain grain, flax, meat, etc. These exchanges were arranged within the larger group, of which he and his family formed a part. The surplus wigs which the father of the family manufactured were turned over to the larger group, and the extra food and clothing produced by other workers were turned



EGYPTIAN MARKET SCENE

over to him. Whether he were slave or freeman mattered very little. The idea of wages for service had not yet developed.

Handicraft system of industry. From industry as carried on in such a great household it was but a short step to the handicraft system of industry. If the wig-maker had two sons, one might take the father's place, while the other made wigs in his own home and exchanged them with his neighbors at some convenient gathering place.

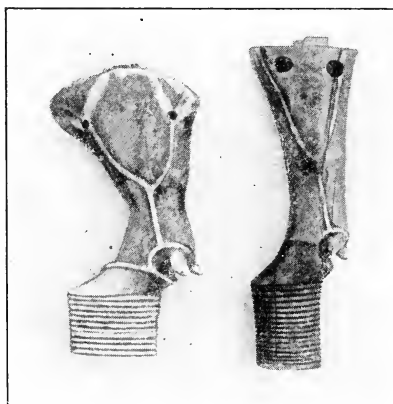
The market. This gathering place soon became a market. How business was carried on in this market one may gather from the illustration on page 46. Farmers, fishermen, and craftsmen met there to exchange their wares. Without a market independent craftsmen would have been unable to exist.

Towns. In time nearness to market became so desirable that the craftsmen moved their homes into the neighborhood. In this way towns grew up. It was natural that those of the same trade should live close together and quite as natural that they should be regarded as a group by the magistrates. In time each craft chose a head man, who appeared before the authorities of the town whenever one of the craft got into trouble, to answer for the offender. It would appear that the head man also had considerable authority over those for whom he was responsible. All this sounds very much like a medieval craft guild or a modern trade union, but the resemblance is more fancied than real. The idea of autocracy was still very strong in men's minds, and it is extremely doubtful that the majority of the workers in a craft had any voice in the choice of a head man or exercised any control over his actions.

Craftmen's shops. As the independent craftsmen grew in number and importance their shops expanded from one-man affairs to organizations of seven or eight workers. At the head was the owner himself, with his sons and apprentices under him and, if he could afford it, slaves to do the heavier and less skilled parts of the work. The tools usually belonged to the master, but the material upon which they were used was frequently the property of the customer.

Characteristics of the crafts. In considering the crafts of ancient Egypt the first characteristic which strikes our attention is the extreme beauty of design and workmanship which the products display. Stools, chairs, and chests are fashioned from ebony, cedar, and ivory—all imported materials, by the way. They are carved, painted, or gilded in a manner to do credit to a modern craftsman. Linen, in which there were one hundred and sixty threads to the inch in the warp and one hundred and twenty in the woof, was woven in very early times. Jewelry, pottery, the

manufacture of boats, the carving and painting of stone, the dressing and ornamentation of leather for clothing, tent coverings, and the trappings of horses and donkeys, to mention only a few, repeat the same story. The second characteristic that strikes the student is that this excellence was attained with no knowledge of science and with but the clumsiest tools. The loom on which this linen as fine as our own was woven was no better than that employed by primitive woman. In some cases the metal blades



Courtesy of the Metropolitan Museum of Art

SUPPORTS FOR A COUCH, IN THE FORM OF BULLS' LEGS

on tools rendered them more effective than those of primitive woman, but the difference was, on the whole, slight. Nothing that even slightly resembles the simplest of our modern machines was known to the ancient Egyptians. The greatest skill and an enormous amount of labor went into the making of these beautiful things.

Commerce. Domestic. In time only the very rich could offer inducements sufficient to draw into their

households skilled craftsmen. Then most people who could afford to have handsome things became patrons of the craftsmen of the towns. Business improved, and the number of the artisans who could support themselves in independence increased. With the growth of the free city population the demand for foodstuffs drew the farmers in larger numbers to the town market. Here they not only sold their products but also bought those articles which it was most difficult for them to make at home, such as metal goods, ornaments of glazed ware, and the like. If the craftsmen had invented cheap means of producing their wares this development might have reached a point comparable with modern conditions,

in which the farmer raises only farm products and exchanges them for all the manufactured articles which he needs. Unfortunately the labor expended in the manufacture of goods was so great that the price remained very high, and the farmer's wife and family were obliged to continue to make most of their own clothing and house furnishings.

In spite of such limitations upon commerce the business of exchanging goods outgrew the narrow confines of the market place.



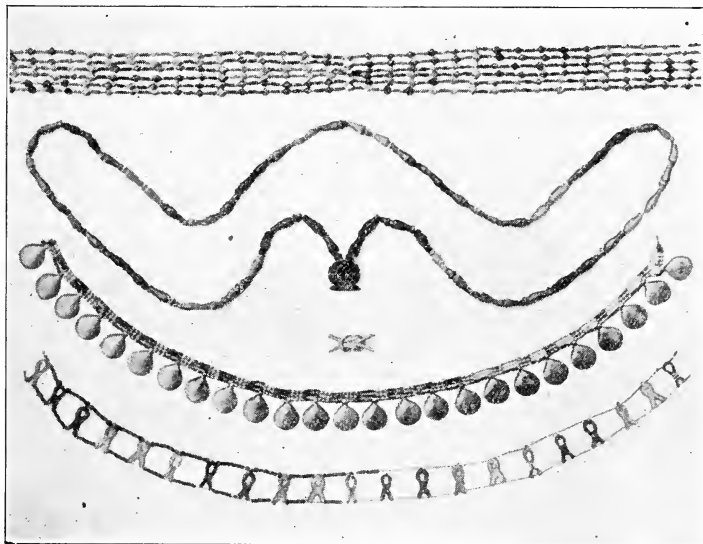
Courtesy of the Metropolitan Museum of Art

EARLY EGYPTIAN POTTERY

Farm products, stone, and manufactured articles were carried up and down the river to more distant centers of trade in light skiffs of papyrus or heavier craft of wood propelled by sail and oar.

Foreign. The foreign commerce of Egypt was never very great when compared with domestic commerce. This was due to the great natural wealth of the country, which left few needs unsupplied, and to the reluctance of the Egyptians to trust themselves to the terrors of unknown lands and seas. One of the few things that were scarce in the Nile valley was wood. The traders of Syria early found it profitable to bring the cedar of Lebanon to the cabinetmakers of Egypt. Slaves (as evidenced by the story of

Joseph), spices, and gold also entered the country from the north-east. Ivory was supplied by the traders of Nubia. The Egyptians themselves sent out expeditions to the Divine Lands and the Land of Punt to obtain the gums from which incense was made. These lands have been identified as the Arabian coast, Sinai, and the coast of Africa to the south. From the articles of Egyptian manufacture found in Crete and other localities in the north,



Courtesy of the Metropolitan Museum of Art

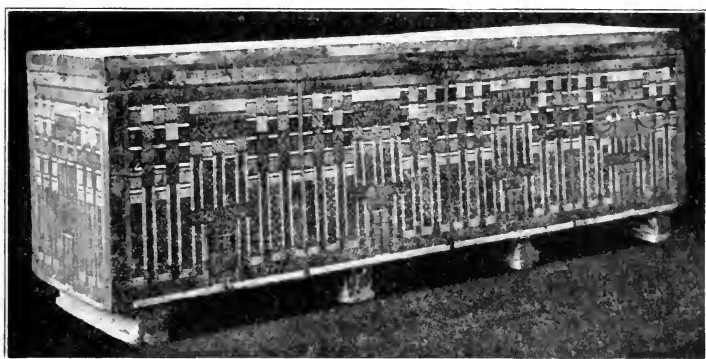
EARLY EGYPTIAN JEWELRY

it is evident that a trade existed between Egypt and the cities in and about the Ægean. Whether this commerce was in the hands of the Egyptians or of the Cretans it is, at present, impossible to say.

Means of transportation. From earliest times the Egyptians recognized the Nile as a natural highway. In the days of the Old Empire, three thousand years before Christ, they had developed several excellent types of boats for use on the river. This made the transportation of goods to all points adjacent to the stream an

easy matter. For overland traffic, however, they were far less well equipped. Goods of small bulk, such as ivory, precious metals, gums, and high-grade manufactured articles, were carried on the backs of asses. Bulkier objects, such as blocks of stone, were placed on sledges and drawn either by men or oxen to the nearest river port. It is not hard to see, with such means of transportation as this, why any goods that were imported were exceedingly costly.

Standard of value. As trade became more general the slow, difficult adjustments which were necessary before a bargain could

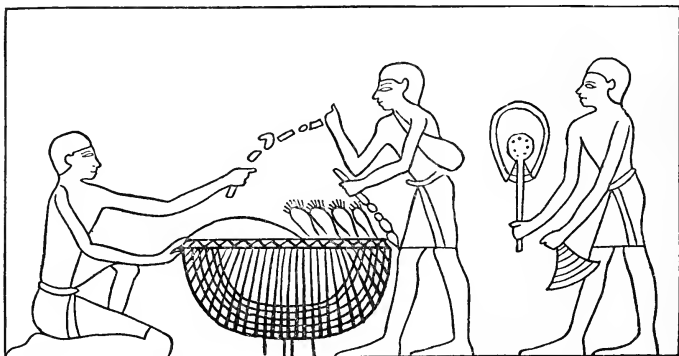
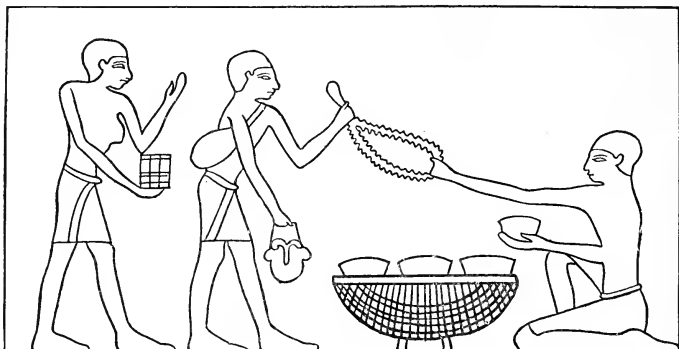


Courtesy of the Metropolitan Museum of Art

AN EGYPTIAN COFFIN

be struck became very vexatious. In the illustration of a market in the days of the Old Empire (p. 52) the man who is buying white cakes or dishes is obliged to give not only the collaret which he at first offered but the sandals as well. It is not difficult to imagine how much haggling went on before this settlement was reached. To simplify the transaction of business it became customary to measure the value of everything by a small weight of copper, one uten (ninety-one grams). No coin was ever struck, but the Egyptian spoke of an ox as worth one hundred and twenty uten just as we should say it was worth so many dollars. Considering that the Egyptians went so far in the evolution of money, it is strange that they did not go one step farther and create a metallic

currency. Stranger still, when the Greeks conquered Egypt and introduced their system of coinage, money as a medium of exchange was not adopted by the Egyptians except in the more progressive centers. Three hundred years later, at the time of the



AN EGYPTIAN MARKET

Roman conquest, taxes were still paid in kind, and the country was still, in the outlying districts, on a natural economy basis rather than on a money basis.

Characteristics of the early agricultural period. *Accumulations of wealth.* With the introduction of agriculture as the basic industry of the country, certain marked characteristics showed themselves in the economic life of the Egyptians. One of the most

striking changes was the vast increase in wealth. During the primitive and pastoral periods what was produced was consumed almost immediately. The Indian women of the Plains dried meat enough to last until the next hunt, but no longer. Even the weapons and clothing which might have been preserved from generation to generation were considered so distinctly the property of the individual for whom they were made that they were buried with the owner. With the coming of the agricultural period all this was changed. Food was sometimes stored, if we may take as historical the story of Joseph, to last for seven years. Permanent brick or stone houses were constructed which endured for centuries. The amount of metals in usable form in the world steadily grew as more was produced than was destroyed. Stones once taken from the quarry were used over and over again and so, even if the buildings of which they originally formed a part did not always remain, were a contribution to the wealth of the country. In addition to this steadily accumulating wealth which was passed on from age to age, the wealth which was produced only to be consumed was far greater than in preceding ages. This could only mean better living for some, if not all, of the population. That the slave of an Egyptian master had better and more abundant food than the humblest class among primitive peoples may be open to doubt. That his food supply was more regular is hardly open to question. All other classes—freemen, craftsmen, scribes, officials, and the rest—found that along with the more steady labor required went better shelter, food, and clothing. The famines which formerly wiped out whole tribes were practically unknown. To the favored few the new order of things brought great luxury, such luxury as had never been known in the world before.

Uses of wealth. As has been said before, only a small part of the wealth of these rich men was used to produce more wealth. The king put some of his surplus into mining operations, quarrying, or war, the last an investment which when successful paid very well in slaves and tribute of many kinds. The nobles built granaries and storehouses and in other ways somewhat improved their estates. The greatest of all the productive works—the national

system of canals and dikes—was built largely by the forced labor of the peasants, which was one kind of tax. Most of the wealth which came into the hands of the few was expended in the enjoyment of expensive things, expensive in the labor and material which went into their creation. Even this use of wealth had its advantages, although it did not make the country as a whole any richer or increase the well-being of the mass of mankind, for it created a market for the finest goods which craftsmen were able to produce. If jewelers had been unable to sell gold collars set with lapis lazuli or turquoise, they would never have made such things. With no incentive to produce the most beautiful thing possible, without regard to the expenditure of time and rich materials involved, they would never have developed the skill or the knowledge which, as it was, they were able to contribute to the upward growth of industry. From them the rest of the ancient world learned the technique of the crafts. To them we owe much that lies at the foundation of our material civilization.

Production on a small scale for a limited market. Another clearly marked characteristic of this period is the small scale on which industry was conducted. There were no great shops comparable with our modern factory in size. Such large-scale production as we know was impossible as long as most commerce was very local in its nature, and only a very limited market was open to manufacturers. Commerce in its turn was retarded by poor means of transportation and clumsy methods of exchange. Railroads and metallic currency were badly needed in ancient Egypt.

TOPICS FOR DISCUSSION

1. Name five industries which a settled home made possible for the Egyptians.
2. Why do people in the agricultural stage have a more elaborate system of government than pastoral peoples?
3. What was the labor system of Egypt? Compare it with that of primitive man; with that of the shepherds.
4. Compare the possessions of the ruler of Egypt with those of a tribal chieftain—Jacob, for instance. What had made the difference possible?

5. Classify the population of Egypt according to occupations. Which classes were better off than primitive man? Which were worse off?

6. What did Egypt contribute to world civilization?

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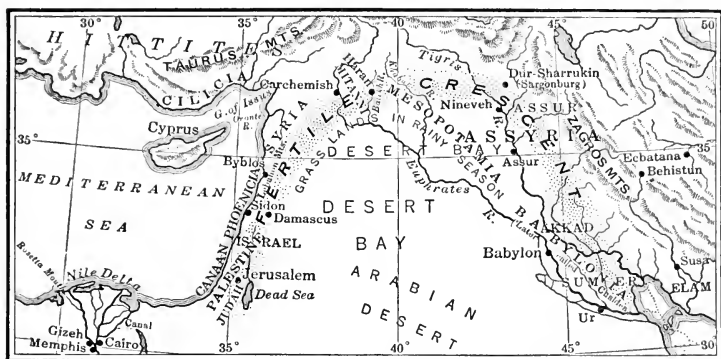
CHAPTER IV

OTHER NATIONS COMPARED WITH EGYPT

Location of the other ancient nations. Although on most sides Egypt was cut off by desert or sea from her neighbors, on the northeast a strip of less forbidding country formed a natural highway to the Tigris-Euphrates valley and Phœnicia. Phœnicia consisted of a fertile strip of land lying between the mountains and the sea at the eastern end of the Mediterranean. In the Tigris-Euphrates valley three civilizations rose and fell. The earliest was the Chaldean, the second the Babylonian, and the third the Assyrian. The three may very well be regarded as one, for they possessed many of the same characteristics, for the reason that each borrowed largely from that which it displaced. For convenience we shall use the term "Babylonian" to denote the whole. One other civilized people came more or less into contact with the ancient Egyptians—a people known variously as the Prehistoric Greeks, the Cretans, or the Minoans. They lived in Crete and the islands and coast lands of the Ægean. Although they were a great seafaring people, we do not know, as yet, whether they carried on commerce directly with the Egyptians or whether the goods which undoubtedly passed from one to the other were carried by the Phœnicians, who were also sailors and traders.

Babylonia compared with Egypt. The earliest of these civilizations to develop was that of Chaldea or Babylonia. In the lower Tigris-Euphrates valley geographical conditions exist which very much resemble those of Egypt and that may account for the early appearance of agriculture in this region. Rain falls for only a few weeks each year; for the rest the land is dependent upon the overflow of the rivers, which was, in very ancient times, assisted and extended by a system of canals and dikes. Properly irrigated, the land produced abundant crops with but slight cultivation.

Industrial development followed much the same lines as in Egypt. After agriculture had made some progress the handicrafts began to advance. Although the manufactured articles of the Babylonians never reached quite the grace of design and elegance of construction found in the Egyptian wares, they were finely made and beautiful. Such things as cooking utensils, tools, and weapons of copper and bronze were in use. Woolen and linen cloth were woven in stripes of many colors and in geometrical designs. Bracelets, rings, necklaces, earrings, and carved seals were among the



MAP OF MESOPOTAMIA

products of the goldsmith's and gem-cutter's art. Such furniture as beds inlaid with ivory, four-legged stools, stands to support vases or lamps, and armchairs with claw feet were created by the cabinet-makers. Along with the development of industry went the growth of commerce, the rise of cities, and the invention of a system of writing.

Use of clay. In two respects the economic development of Babylonia differed from that of Egypt. And these unlikenesses may be traced directly to the differences which existed in the geographical conditions surrounding the two peoples. Although the geography of the two countries possessed many striking points of similarity, they were unlike in two respects. Egypt was endowed with almost unlimited supplies of stone of fine quality for

building and sculpture, while the lower Tigris-Euphrates valley was a flat, clayey region with little timber and no stone. The only stone at all accessible was in the mountains to the northwest, where the rivers took their course through a rugged country before they descended to the plain. Brought from such a distance stone became very expensive because of the labor consumed and the hazards encountered in procuring it. To meet this condition the Babylonians evolved excellent types of brick and tiles. These they used for all construction except an occasional bit of decoration, for which they imported stone. Temples, raised one receding story above another toward the sky, and vast rambling palaces occupied by the king and his court, were all of brick, and with the action of time have in many cases returned to the clay of which the bricks were formed. Only the plan of the buildings may be traced, with here and there a series of stone slabs which once faced the great hall, or the stone lions which guarded from evil spirits the doorway of a chamber remain to tell of the departed glory of the place. In Egypt stone served not only as building material but also as a surface upon which might be recorded the story of the greatness of the king and nation. For this purpose as well the Babylonians used the clay, and as no papyrus grew in the country they extended the use of clay to those more temporary records for which the Egyptians employed papyrus sheets, or paper. The clay was shaped into small flat lumps or six-sided cylinders, and while still moist the wedge-shaped characters of the Babylonian alphabet were impressed upon them. Such tablets were used for works of literature, contracts, and letters. When baked, as many of them were, they proved more enduring than papyrus.

Commerce. The second geographical difference which existed between the two countries was this: instead of being shut in by the desert, as Egypt was, Babylonia was connected by means of the rivers with the hill country on the north, and, through an inhabited district known as Syria, on the west with Phœnicia and the Mediterranean Sea. These conditions led the Babylonians to engage in an extensive foreign commerce in addition to the

domestic commerce which advancing civilization had brought into being. As overland commerce reached considerable proportions, roads became necessary, and the Babylonians developed into excellent road builders. Commercial law and a primitive banking system also came into being to meet needs which commerce had created. In the extent of their foreign commerce, as well as in their extensive use of clay for building material and writing, the Babylonians were very unlike the Egyptians.

The Cretans. Some thousand years after the beginning of civilization in Egypt and Babylonia, the people of Crete and the islands of the Ægean began to farm their lands, to build permanent homes, and to improve on their primitive handicrafts. With the sea at their doors they naturally took to fishing, to building boats, and, in time, to trading. They also created a system of writing, but as no one as yet has discovered how to read it, their writings do not help us to determine what part they played in the unfolding of material civilization. It seems probable that the Cretans were the first people to engage in sea commerce extensively, and that with the decline of their great sea empire the Phœnicians inherited their commerce, along with some of their civilization, but we have no absolute proof of this. Accordingly we will turn to the Phœnicians, of whom we know more.



BAKED-CLAY CYLINDER INSCRIBED WITH THE ANNALS OF ASHUR-BANI-PAL, KING OF ASSYRIA FROM 668-626 B.C.

This may seem a strange history book to us, but it was the only kind that was known to the people of Mesopotamia

The Phœnicians. *Geography of the country.* At the eastern end of the Mediterranean lies a narrow strip of fertile land which was known in antiquity as Phœnicia. Beyond the plain skirting the shore the mountains of Lebanon shut off Phœnicia from Syria and the desert on the southeast. Along the shore are a few harbors which afforded a safe anchorage for the small boats of ancient times. Each part of this country offered something of value to the inhabitants. On the hills grew the cedars of Lebanon, which made the construction of substantial, seaworthy boats possible. The vine and the olive grew on the lower foothills, and the few flocks and herds of the country found pasturage there. Within the hills were rich veins of copper ore. In the arable fields along the shore wheat and barley were grown. Even the sea made its contribution in the form of edible fish, which served the Phœnicians very largely in the place of meat. Most valuable of all the gifts of the sea was the Tyrian Murex, a small shellfish from which the famous Tyrian purple dye was made.

Early economic development. The Phœnicians originally settled in separate communities which were never firmly united. The most important of these city states were the seaports Sidon and Tyre. Agriculture was early developed to a high state of perfection because of the fertility of the soil and the limited district occupied. The handicrafts by which the Phœnicians worked up their natural products into manufactured articles also greatly advanced. And with the need of more raw material and markets for their goods pressing upon them, they turned to trade. As the mountains on the east made overland commerce difficult, the Phœnicians at first followed the path of least resistance and took to the sea, which had become their friend through years of fishing on its bosom. On the island of Cyprus, visible from their shores, they found people in a lower stage of industrial development who were glad to give them materials in the rough, such as copper, silver, and iron, in exchange for their manufactured goods.

Expansion of commerce. This was but the beginning of a long story of economic expansion. From Cyprus the Phœnician traders moved northwest to Rhodes and the islands of the Ægean, visited

the ports of Asia Minor with their goods, and finally entered the Black Sea. Along the north shore of the Black Sea they came in contact with a pastoral people who were glad to exchange wool and woolen yarn, iron from the native mines, and amber brought down to them from the Baltic for the manufactured goods which the traders had to sell. In time the Greeks drove them out of this region. They then turned to the western end of the Mediterranean for their markets. Here along the northern coast of Africa, in Sicily, southern Italy, and in the Spanish peninsula, they established trading posts. Out through the Strait of Gibraltar they ventured to the southern coast of England, where they exchanged their bright-hued cloths for the tin of Cornwall. The trading posts which they established at their regular stopping places sometimes, though not often, grew into important cities. The most famous of these was Carthage, in northern Africa, which became the capital of a great empire in the fourth and third centuries B. C. The vastly greater number of these trading posts continued to be small stockaded inclosures where a little group of Phœnician officials and native workmen gathered into warehouses the native products in demand at home against the time when the next ship should arrive. In time the Phœnicians also worked up an overland trade with Judea, Egypt, and Babylonia. The goods exchanged with these nations were largely the manufactured specialties of each country. In some cases the Phœnicians brought to their own ports Babylonian and Egyptian goods, which they shipped west.

Phœnician industries. The foremost industries of Phœnicia continued to be those for which nature had best fitted her. Weapons, tools, and ornaments in copper and bronze, silver and gold, were made in Sidon and Tyre and sold all over the ancient world. Ship-building was carried on for the use of the native merchants only, as the preëminence of Phœnicia on the sea was due to her exclusive possession of efficient ships. Weaving, dyeing, and finishing of cloth furnished occupation for thousands. Glassmaking, an art acquired along with much else from the Egyptians, reached some importance. In general it is fair to say that the Phœnicians were copyists rather than originators in the field of industry. In one

branch, however, they made a great stride in advance of their teachers: they introduced the use of iron and of steel (a tougher mixture of iron and carbon) for tools and weapons.

Labor. Phœnicia became a great workshop because of the extensive markets for her manufactured goods which her commerce opened to her. Very soon her need of raw material outran the home supply, and commerce here also met the need by supplying what was required. When labor ran short the traders came to the rescue again, and the returning ships brought back thousands of slaves, along with copper, tin, silver, wool, and amber. Practically all the work of the country was done by slave labor, while the freemen occupied themselves as industrial managers, merchants, and financiers.

Services of Phœnicia to civilization. The vast wealth which flowed into the country served to enrich the merchant class. Some of it was invested in ships and other profitable lines, but much was consumed in luxurious living. When the Greeks and Carthaginians began to offer competition the inability of the Phœnicians to protect themselves by force of arms, and the exhausted condition of the natural resources of the country as a result of the exploitation to which they had been subjected for hundreds of years, rendered them incapable of maintaining themselves against their rivals. If some of the wealth which had been taken out of the fields and mines of Phœnicia had been put back in the form of permanent improvements, the result of this economic struggle might have been different. As it was, Phœnicia served the advance of industry well by spreading the products and industrial attainments of the East to the Greeks, Romans, and other nations of the West less advanced than the Eastern nations.

TOPICS FOR DISCUSSION

1. How did the industry of Babylonia differ from that of Egypt? To what were these differences due?
2. Why was Phœnicia a greater commercial country than Egypt?
3. If you had been the ruler of Phœnicia how would you have prepared her to meet the competition of Greece and Carthage?

4. Look up the government of Phœnicia. Does her form of government explain why she fell an easy prey to conquerors?

5. Which rendered the greater service to the development of industry, Egypt or Phœnicia?

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CHAPTER V

INDUSTRY OF THE CITY STATE

Geography of Greece. The land to which we will now turn our attention differs greatly from the home of the ancient Egyptians or Babylonians. It included the irregular, mountainous peninsula known today as Greece, and the islands of the Ægean Sea. In their most flourishing days the Greeks, spreading their settlements along the shores of Asia Minor, the Black Sea, Sicily, and Italy, made all these regions Greek lands. The mainland and the islands shared much the same climate, resources, and physical characteristics. The winter is short, mild and rainy; the summer, dry and hot. The heat is made bearable by winds which blow with unfailing regularity during the summer months. Everywhere there are mountains separating the valleys and plains from each other. The coast of the mainland is so indented that the sea is almost as close a neighbor to the Greeks of the mainland as to those that live on the islands. The islands lie so near to each other and to the shore that it is possible for sailors to cross from Greece to Asia Minor without going out of sight of land.

Native products. In ancient times the bear, wolf, boar, and deer roamed the woods and hillsides of Greece. Birds of many kinds had their nests in the trees and reeds; fish were abundant in the streams and bays; and the sponge was found there in large quantities. In the arable lowlands wheat and barley grew. On the hillsides the vine, the olive, the fig, the almond, and the walnut flourished in spite of the lack of moisture. Here the flocks of sheep and goats pastured. Timber-producing trees were scarce, but the bare mountains offered an excellent building material in the tufa and limestone, which appeared in the form of marble in several places. Some copper and a little silver were mined in Greece and

the islands in ancient times. Fine white clay, excellent for pottery, and earth containing minerals which served as paint were abundant.

Prehistoric Greek industry. In early times the peninsula of Greece and the islands about were inhabited by a people who are called by historians the Minoans, Mycenæans, Cretans, or Prehistoric Greeks. These people passed from the primitive stage to the agricultural stage about the year 2800 B.C. From that time until 1000 B.C., when they were overthrown by less civilized conquerors, industry and commerce increased among them. Agriculture, carried on with a few simple tools and much hard hand labor, formed the basis of their progress. Division of labor made its appearance; the potter, carpenter, and bronze caster were recognized as belonging to distinct classes of workers. The implements include such as their industries would lead us to expect: bronze sickles, plows, stone mortars and querns for grinding grain, looms, the potter's wheel, saws, chisels, awls, nails, files, and axes. Their products included beautifully shaped, decorated, and glazed pottery and trimmings, fine textiles elaborately embroidered, leather belts and high shoes, besides the copper and stone implements. They built ships of an excellent type as well as houses and palaces.

Commerce. By 1500 B.C. the Cretans were engaged in an extensive commerce with Egypt on the south and the islands of the Ægean, where those of their own race lived, on the north. Goods were transported in ships propelled by two sails, in addition to the oars. Objects which have been unearthed in Crete show that products of Egypt and the north were brought to Crete a thousand years earlier. Whether the Cretans were in possession of that trade as early as 2500 B.C., or whether the Phœnicians were the carriers for all the Mediterranean countries at that time, it is impossible at present to determine. Many archæologists believe that the Phœnicians did not become great traders until the sea kingdom of Crete sank into impotence.

The Dorian invaders. For reasons unknown to us the states of the Prehistoric Greeks, although continuing to advance industrially, became too weak to resist the attacks of a less civilized but more warlike people from the north, the Dorians. These people

were in the pastoral stage of development when they descended into a land which had been under cultivation for many hundreds of years. The cities and palaces which fell into their hands had evidently no charm for them, for they left them (already half destroyed by the struggle which had gone on in and around them) to fall entirely to ruins. The arts and crafts which had flourished in the land received little encouragement from the Dorians. They were not completely lost, however, and so were easily revived under more favorable conditions. In this new environment these shepherds gave up their nomadic life to become farmers. In a comparatively short time they had developed all the characteristics of the agricultural stage of industry, differentiated handicrafts, city life, and commerce.

Classic Greece, 1000–300 B.C. *The city state.* The Dorian and Ionian shepherds descending into Greece found themselves in little compartments of plain and valley, divided from each other by mountains and sea. In each compartment the settlers established an independent state, and these little states remained free and self-governing during the years when the Greek genius was producing the temples and statues, the drama, literature, and philosophy which have made the Greeks forever famous. Each settlement grew into a city state. On a hill or rise in the ground located somewhere near the center of the plain or valley which made up the territory of the state a fortified inclosure was usually built. Here the chief of the tribe settled and here the farmers took refuge when they were attacked by their neighbors. In time a town grew up on and about the citadel, temples were erected to the gods, public buildings for the use of the government (which had taken on a more or less democratic form) were put up, and the shops and homes of craftsmen and traders gathered about the market square. Such were the famous Greek states—a town or small city set on a hill, with farming country stretching out on all sides and scattered over it farmhouses and occasional tiny villages. In some cases the city was situated on a harbor, as in the case of Corinth; in others it was connected with a port town, as in the case of Athens.

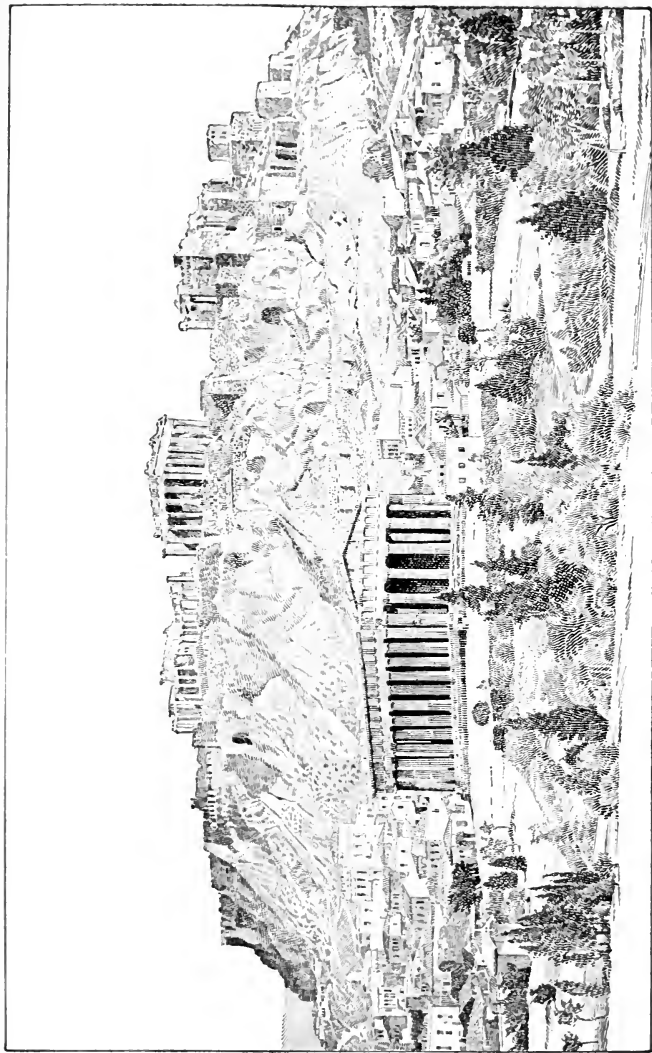
The city state was as independent economically as it was politically. The farm land and pasture produced food and clothing. On the hillsides was stone for building and sculpture. Clay suitable for bricks and pottery was found everywhere. When, in due



GREEK TERRA COTTAS OF THE FOURTH CENTURY B.C. SHOWING
WOMEN'S COSTUME

course, the crafts came into being as clearly differentiated industries, each settlement showed the greatest individuality in the goods it produced. One city made one type of sandal, another, a shoe; Athenian pottery could never be mistaken for that of Sparta, and the pottery of Corinth is easy to distinguish from that of its two neighbors.

Colonization. In the early days the Greek states depended largely upon agriculture for their wealth. Trade had not grown



THE ACROPOLIS OF ATHENS

This hill was originally a fortified stronghold. Later it became the religious center of the city, and on and about it were located temples and statues to the gods

up as yet, and the crafts were in their infancy. Under these conditions the increasing population found want staring them in the face. If sons divided the father's farm among them, there was not enough to give each a living. If the farm was given to one, the rest were without land and must starve, for there was no other opening for them except in agriculture. In this dilemma the wiser heads bethought them of the richer shores of which they had heard reports from some of the sailors of the community. When the landless class began to complain they were advised to take up land on those distant shores. A group of the more daring souls organized under a leader, and with the blessing of the mother city they set out.

The colony so founded began as an agricultural settlement, but its very existence led to trade. It was unlike the Phœnician colony in the purpose for which it was founded and in the economic organization which its founders gave it. The Phœnician colony was a market place, with the necessary warehouses and protecting wall. The Greek colony was a farming village set in the midst of its fields. Each settler had a right to a house lot in town and an equal share of the farm land and pasture, which was divided. If the town possessed more land than the original settlers needed, it was kept as town property to be given in equal plots to later comers. These colonies often prospered so that they grew into greater states than the cities from which they had come, and they enjoyed complete independence of the latter.

Effect of the colonizing movement. The effect of the founding of colonies was much the same in the case of Greece that it had been in the case of Phœnicia. The natural products of the district in which the colony was situated were developed by the colonists and offered in trade to the home city. This led to a constantly increasing commerce between the home city and the colony. It also encouraged the growth of handicrafts in the home city to supply the colony. The increased commerce and industry of the mother state offered the landless an opportunity of making a living at home. And so as industry and commerce developed in the Greek cities the colonizing movement died down.

Agriculture. Even after Athens, Corinth, and the other maritime cities of Greece had built up an extensive trade and one or more lines of manufacturing, agriculture continued to be the basic industry and that in which the majority of the inhabitants were engaged. Taking Attica—the little state ruled by the city of Athens—as a typical city state, we find that most of the land was divided into small farms worked by the peasant proprietors. The few larger landholders formed the aristocracy of early Athens. Later some of the small landowners found it more profitable to move into the city and become craftsmen or mariners. Then their lands were bought up by large landowners who, managing their estates on a capitalistic basis, invested in large numbers of slaves and produced a main crop which found a ready market among the export merchants at Piræus, the port of Athens.



RULER OF A GREEK COLONY SENDING
NATIVE PRODUCTS TO GREECE

There were three classes of agricultural products: the animal products, largely from sheep and goats; grains and vegetables; and the vine and the olive. The first two were necessary to support life, the last furnished the two great agricultural exports of the country—wine and olive oil. The goats and sheep were pastured on the mountain sides, where poor soil and lack of moisture made cultivation impossible. The shepherds won for themselves a bad name by quarreling with shepherds of bordering countries and by burning or otherwise destroying the forests on the mountains above their pastures to make more room for their flocks. When the trees were once destroyed, the goats, by nibbling off the new shoots

as fast as they appeared, kept the timber from growing again. These flocks furnished milk, cheese, wool, and the small amount of meat that was eaten.

Grain and vegetables. In the plains crops of wheat and barley were raised, with lentils, peas, beans, onions, and other garden vegetables. The land was plowed with an ox plow much like that in use in ancient Egypt. Ditches carried water from the little rivers over the fields. There was no Father Nile to spread rich earth yearly on the exhausted fields, so the Attic farmer had to choose between putting manure on his land or allowing half of it to lie fallow (uncultivated) each season. For some reason he seems usually to have chosen the latter method, although there is evidence that he was not unacquainted with the use of manure. When the grain was cut, it was tied in sheaves and carried off to the threshing floor (a space paved with stone). Here it was spread out, and mules or oxen were driven over it until their hoofs had separated the kernels from the husks. The straw was gathered up. The grain was put in a shallow basket and thrown up in the air so that the wind might blow away the chaff. When this process was completed, the grain was put into sacks or, more often, huge earthen jars. In the country the grain, as it was needed, was ground in primitive stone mills by the women of the household; in the city the grinding was done by professional millers in larger mills.

The vine. The cultivation of the vine was carried on where terraced hill slopes offered opportunity for that and nothing else. Wine was made at first for home consumption and later for export.

The olive. Many people in England and America would not know the difference if all the olive trees in the world were swept out of existence. Olives are a luxury with us, and olive oil plays such a small part in our diet that we could adopt some of the substitutes which we have for it without noticing the change. In Greece the case was quite different: olive oil was eaten in place of butter, rubbed on the body in place of soap, and burned in lamps instead of kerosene. The government of Athens considered the olive tree such an important source of wealth that it made laws

to protect it. The cultivation of the olive presented some serious difficulties. Foremost among them was the expense of starting an olive grove. The trees did not bear until they were sixteen or eighteen years old. In the meantime they were occupying arable land, which was none too plentiful in Attica. It is true that between the trees, which stood some forty feet apart, the farmer planted grain, but the amount of grain so raised was only a fraction of what the same fields would have produced under normal conditions. Trees did not reach their best crops until they were fifty or sixty years old. Moreover, when an olive orchard was once started, it required very little care and yielded good returns. The olives were ready to pick in late autumn after the other crops, including the grapes, were out of the way. People came out from the city to pick the ripe olives from the trees, much as berry pickers go about the country with us. When the olives had been picked they were put in a press, which extracted the best grade of oil at the first crushing. This oil was used for the table. The olives were put through the press a second and a third time, the second operation producing the oil used to anoint the body and the third, the lighting oil. What was left of the fruit was fed to the cattle. Olive oil was a product that could easily be turned into money because it was in demand with rich people and importers, who were ready and able to pay for their purchases in coin and not in kind, as many of the poorer people still continued to do; for this reason olive orchards were established by the larger landowners with capital, who farmed to make money and not simply to get a living.

Other farm products. Among other farm products which played a more or less important part in the household economics of the Greeks were honey, figs, and flax. Sugar was unknown to the people of the Mediterranean countries; in its place they used honey or sweet fruits, such as dates or figs. As the date palm did not grow in Greece all the dates were imported; but the fig did grow there, and the Greeks ate figs, both fresh and dried. Honey made by wild bees was found in hollow trees in the woods. The Greeks, not content to rely on the uncertain supply to be obtained

in this way, soon learned to keep bees in their own hives. Since cotton did not grow in Greece at all, flax was raised and some linen cloth was made, but as flax was difficult to grow, linen was considered rather a luxury for the rich than a necessity for all. In spite of the heat most people wore woolen clothes.

Characteristics of Greek agriculture. Several striking characteristics mark Greek agriculture. First in importance is the very limited variety of products which the Greek farmer raised: no potatoes, no corn, no cotton, sugar, tea, coffee, or cocoa, no root vegetables such as the turnip or beet, no lemons or oranges and no hay were produced and no cows and horses were raised. The simplest and crudest implements were used, and the methods were those which tradition and not science prescribed. This lack of progress was due to the Greek farmer's ideal of life. Most farmers raised crops that they might have a comfortable living; they did not work to accumulate a great fortune. The result of this was that a farm was usually run so as to yield enough food and clothing for the owner and his family, and that was all. This attitude of mind militating against progress in industry was a characteristic which the Attic farmer shared with all Athenians.

Handicrafts. When the Dorians entered Greece with their flocks each household carried on practically all the industries necessary to sustain life. When cities grew up they found it more profitable to leave to specialists several types of work that had been household industries. It was better, for instance, that a few men should supply themselves with tools and make sandals and shoes for all the people in the city than that everyone should attempt to do this for himself. With specialization came a great increase of skill on the part of the worker. When the growth of commerce afforded the Athenian craftsman a market for several times the goods that the Athenians could consume, both the quantity and the quality of manufactured articles improved greatly.

Crafts in the fifth century. In the days of Athens' greatness, the fifth century B. C., crafts had been so specialized that there were millers, bakers, dyers, fullers, weavers, hat-makers, tanners, shoe-makers, jewelers, quarrymen, stonecutters, lumbermen, carpenters,

roofers, furniture-makers and cabinetmakers, potters, and armorers. Each craft had its own quarter in the city. These quarters were in the streets leading off the market place, where many people passed, because the craftsman not only made goods in his shop but also sold them there.]

The mason. We will take up in detail two crafts—that of the stonecutter, or mason, and that of the potter—as illustrating outdoor and indoor work. The stonecutter had his little shop in the stonecutters' quarter, where he worked himself and at the same time superintended his apprentices and slaves, who numbered eight or ten. Here he took orders for gravestones or for columns for a wealthy Athenian's courtyard. If a public building was to be erected he and his assistants might work together on practically equal terms, or he might contract to do a certain small portion of the work; in the latter case his workmen made up all the force he brought to the job, but in the former case they seem to have worked on equal terms with him. One curious fact is brought to our attention in examining the state records in regard to the building of the Erechtheum at Athens. In the year 409 B.C. the state was paying wages to twenty-seven citizens, forty free aliens (or metics), and fifteen slaves. All these, including the foreman, received the same wages; in one case, at least, the foreman of a job was a slave. (Wages paid to slaves belonged by law to the slave's master, but the master usually allowed the slave to keep a part of his earnings, and in this way the slaves frequently bought their freedom.) The remarkable point is, however, that freemen possessing the coveted right to vote should be willing to work on equal terms with slaves. There are two explanations for this. In the first place, the slave was often a well-educated and skilled worker whom the fortunes of war had reduced from wealth and importance to his present position. He deserved the admiration of his fellow workers, and they, with the artist's true democracy, were ready to give it. Furthermore, they knew well that the fortunes of war might, at any time, reverse their positions. This shows how different slavery was in Greece from what it was in a country where a less civilized race made up the slave class.

The potter. The ceramicus, or potters' quarter, was one of the most important districts of the city. This was due to the large part that the work of the potter played in ancient life. Great earthen jars have been mentioned as the carriers in which oil and grain were stored or transported to the place where they were to be used. Such jars were of the simplest and roughest type. To the same class of ware belonged the cooking pots and the charcoal



GREEK VASES, CORINTHIAN STYLE, 650-600 B.C.

stoves into the top of which they fitted, and all the dishes and bowls of the very poor. Well-to-do people used a better grade of ware made of finer clay and decorated. The great water jars which the girls carried to the well or spring were of this type. The mixing bowls, in which the Greek mixed the water and wine (his customary drink), the shallow cup from which he drank his wine, the little pitcher from which he poured oil over himself after his bath, and the lamp which dimly lighted his house at night were all products of the potter's art.

Decoration of pottery. Either from necessity or choice the Greeks refrained from purchasing Egyptian and Phœnician glass or the gold and silver cups which Eastern princes considered an

indispensable part of their household equipment. The baked-clay substitutes with which they were satisfied, however, were so graceful in shape and so charmingly decorated that they have since been regarded as priceless objects of art. They were made of a fine grade of clay which took color well and gave a hard, unglazed surface when baked. The designs were painted on for the most part, although lamps occasionally exhibit molded decoration. In early times geometric designs were in high favor. This fashion was followed by a fad for three to five rows of animals arranged around the vase. This type of decoration was suggested by Eastern textile designs. A third type of decoration consisted of pictures illustrating myths and stories or scenes from everyday life. This type of decoration proved most satisfying to the Greek sense of the artistic and continued in vogue for hundreds of years. Much of the clay used by the Greek potters was a light brown when it was baked. In the early pottery, this tone was used as a background, the design being painted on in black or brown. This was not satisfactory to the artist-potter, so he laid on a wash of red or white. On the red background the black figures, which stood out in delightful contrast, were painted. In time ambition led him one step farther, and he left the figures in the red of the background and painted in around them in black. This gave the effect of red figures painted on a black foundation and at the same time it enabled the artist to draw in a drapery, features, etc. in black on the red figure.



ATHENIAN WATER JAR
(FIFTH CENTURY B.C.)

Art spirit of craftsmen. To arrange a geometrical pattern on a crater (mixing bowl) is a comparatively simple matter, but to draw a picture of Paris awarding the apple to Venus so that it

shall fill the peculiar space which the form of the crater offers for decoration and be at the same time a pleasing picture is quite another thing. Such work would have been impossible if the Greek potters had not been artists as well as skillful craftsmen. To the Greek mind the sculptor, the painter, and the potter were all alike craftsmen-artists, and the same dignity attached to all.



ATHENIAN MIXING BOWL,*FOR WINE
(FIFTH CENTURY B. C.)

The potter's shop was a studio where master and apprentices worked together creating beautiful vases. No two articles were exactly alike—each was the expression of the creative instinct in the mind of the maker.

Organization of trades.
A single shop, very unlike our modern factories, seldom contained more than twelve workers all told and frequently not more than five or six. All the potters of a city seem to

have recognized a community of interest in spite of the small shop groups into which they were divided. In the course of time they united into an association which held meetings to worship the patron god of their craft and to talk over matters of common interest. Partly through such associations and partly through the knowledge handed on by master to apprentice, the technical knowledge and the mechanical skill of the Greek craftsman were preserved and increased. There were no schools in the modern sense of the word, and no books to preserve and disseminate what little science industry had stumbled upon. But for the handing down by oral tradition much valuable knowledge would have been lost.

Where the Greek craftsman failed. The lack of a permanent record of the progress and secrets of the arts and crafts was probably due to the fact that the men who could write books did not think it at all worth while to write about anything so commonplace as the potter and his pots. They had not learned, most of them, the importance and the charm of the common things of life. The potter, too, was more artist than potter; he cared far more that the vase should be beautiful in shape and decoration than that it should be stronger or produced at less cost than others which he had made. As a result of this attitude of mind the generations of potters who plied their trade between the years 600 and 300 B.C. did almost nothing to advance the technical processes of their craft or reduce the cost of their product. Just here is the reason why the Greeks, with their wonderful intellectual power, did not advance the technique of the industries to any marked extent.

✓ *Unskilled labor.* Most Greek citizens were either farmers working their own farms, artist-craftsmen managing their own shops, or merchants sailing their own ships upon the seas. Comparatively few worked for wages except in the public service. The Greek had a strong distaste for monotonous work of any sort. He very much preferred to be a shoemaker than a secretary, for instance, and he desired above all things to be his own master, free to come and go as he liked. If one could not do this, one was no better off than a slave, in his estimation. Like most artists he was ready to do without the orderliness and cleanliness in his home and in his city which we demand, rather than perform the necessary drudgery to create such conditions about him.]

Even with slovenly living there still remains much uninteresting manual labor which must be performed by someone. This work fell to the share of the women in the households and to the slaves. Women of all classes were brought up to consider it their duty to spin, weave, cook, and keep their houses clean. A woman was not expected to ask a share in the intellectual pleasures and political activities which occupied so large a part of her husband's time, and few dared to rebel.

In the household of the wealthy the mistress did not actually perform these tasks herself; instead, she was the superintendent of the household slaves, but in either case her life must have been exceedingly dull and narrow. The slave appeared everywhere in Greek life. Male and female slaves were cooks, maids, tutors, torchbearers, and water carriers in the homes of the well-to-do. All large farms employed slave labor in great numbers, as many as a hundred slaves being the property of one man. These slaves were imported in great numbers from Asia and Africa, although some were raised in Greece and a few were captives taken in war by the Greeks themselves. In general they were well treated, and frequently they were freed by their masters. They served civilization in that they set the Greek free from the drudgery he hated, to devote himself to art, philosophy, and politics. It is possible, however, that if the Greeks had not been able to throw off the drudgery, they might have been driven to invent some of the labor-saving devices which have transformed industry in the last century and a half.

Use of money. About 700 B.C. metallic currency—pieces of metal shaped into coins of certain fixed values and stamped with a symbol of the city, which guaranteed them to be of correct weight—came into use in Greece. At or slightly before this time the Phœnicians had begun to use coins in their business transactions, but the Greeks seem to have learned to make coins from the Lydians and not from the Phœnicians. The introduction of money had an enormous effect upon industry, commerce, and politics.

The effect on industry came partly through its effect on commerce. In the primitive age all exchange was arranged by a system of barter, and this continued to be the method of exchange in the pastoral age and among the early Egyptians and Chaldeans. Barter is the exchange of goods for goods. One man having more of a product than he needs for his own use exchanges his surplus for something else of which he has less than he needs. Barter can only exist conveniently between two people each of whom has something that the other wants. The shepherd

may have wool to offer when he needs grain. The farmer who has the grain to dispose of needs a sickle. In that case the farmer must take the wool which he does not want, on the chance that some implement-maker will give him a sickle for it, or no bargain can be struck. If the farmer does take the wool he will naturally demand a great quantity of it for a small amount of grain, as he is running all the risk in the transaction. He knows that when he finds a sickle-maker the man is as likely to be in need of grain as wool. Under such conditions prices were uncertain and all transactions difficult to arrange. It was far more economical to raise both wool and grain, where possible, than to attempt to specialize in one and supply the other by exchange. As long as barter remained the only method of exchange, specialization in industry was greatly hampered.

Money. In time different regions developed some specialty in which the inhabitants traded very largely. For instance, the Britons of Cornwall mined a great deal of tin, which they traded

off to the Phœnicians for manufactured goods. It soon became customary for anyone having more of something than he wanted, to trade it for tin, as he knew that he could buy things that he wanted with the tin when the next Phœnician galley visited his shores. Among pastoral people sheep and cattle were used in the same way as a medium of exchange. Very soon, however, it became apparent that gold and silver were the most convenient media of exchange. Both metals were in constant demand, so that their



GREEK COINS

value did not vary greatly from time to time. They were not bulky in proportion to their value, and they did not rust or decay if they were kept for a long time. It is evident that the Egyptians used lumps and rings of gold and silver in the market place, although they had no idea of a money system such as the Greeks introduced. With them, as with the early Greeks, the metal was weighed and tested at each exchange, and the whole transaction resembled barter quite as much as it resembled modern buying.

With the introduction of metal coins a great advance was made. In the first place, it was far easier to use lumps of metal that were plainly marked with their weight and quality as guaranteed by the state than to stop and weigh and test the metal each time. It made trade easier and so induced people to trade more.

In the second place, it encouraged specialization in industry. When the man who had produced much more of one kind of goods than he needed for his own use found that he could sell the surplus for money, with which he could buy anything he needed, he was encouraged to give up other lines of production and push his special line. The potter, for instance, could afford to give up his farm when he knew that his jars would bring him in money, with which he could buy food and wool for his household.

In the third place, it made the accumulation of wealth easier. Metal coins will keep indefinitely, but wool, olive oil, and wine will not. When a man's extra wealth was in the form of metal coins he could keep it until he had enough to start a new business or enlarge one already started. Wealth used in this way, to produce more wealth, is called capital. That the Greeks did not take full advantage of the opportunity which money offered them to develop their industries was due to two causes: their country was so poor that no great amount of wealth could be accumulated for use in expanding their industries, and they were not of the type of mind to be interested in production on a large scale.

Effect of money on commerce. The introduction of money greatly facilitated commerce. The accumulations of capital, small as they were, made trading ventures possible to a larger number of people than had been able to engag  in them before.

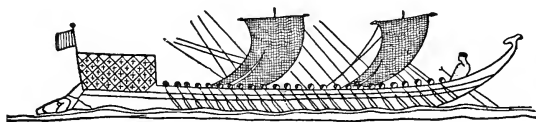
Political effect of the introduction of money. The political effect of the introduction of money lies outside our sphere of interest. It is only necessary to say that the man who receives money for his products or his labor and pays his taxes in money and not in labor or in kind has, inevitably, a freedom of movement that is denied to the man who must pay his dues in services or goods. The state, too, is given a freedom of action by the possession of money taxes which it cannot enjoy under the more primitive system.

Finance. Money was such a new thing in the world that it is not at all surprising to find that the Greeks had some very curious ideas on the subject of finance. In the first place, neither states nor individuals understood that capital, whether in the form of tools, improved land, or coin, must be put to work in order that the possessor may derive the benefit from it. The farmer cultivated his land to the last square foot of available field, but his money he regarded as different. He tied that up in a cloth and buried it. The state either invested its surplus revenue in monumental public buildings or stacked it up in great jars in the temple of the patron goddess. In business life the only bankers were the money changers. They sat at their little tables in the market place changing foreign coins for those in use in that market. From such work as this it was an easy step to lending money and caring for the money of those who preferred to trust the strong box of the money changer rather than the somewhat doubtful security of their flimsily built houses. The rate of interest was ruinously high, from twelve to twenty-five per cent. This high interest was due to the uncertainty of repayment. Borrowings were made chiefly by persons in great temporary need and not by those who were to invest the money in a legitimate business enterprise. Capital for business undertakings was furnished by the person engaging in the undertaking or by a group of his friends. Such a primitive financial system was possible only in the day of very small business.

Commerce. Greece, with all its natural resources most thoroughly developed, was a poor country at best. The frontier of civilization—the coast of the Black Sea, Thrace, Gaul, Spain, ↓

and northern Africa—offered raw materials of which the Greeks stood in sore need. The more industrially advanced regions of the East offered manufactured products which were luxuries, no doubt, but for that reason found all the more ready market among the people who had money to spend. These two types of goods were imported. In return the Greeks exported wine, oil, the beautiful native marble of Greece, and such manufactured goods as the famous Athenian pottery.

Commerce had its beginning in the activities of sea robbers and pirates. These enterprising creatures set sail from their native city with the good will of all they left behind, including the authorities, and attacked and robbed any settlement along the



A GREEK SHIP

coast or any ship sailing the sea which they could. The goods they brought home were all the imports their city received. In the course of time it became apparent that in many cases it was an advantage for two cities to act together, each agreeing not to rob the citizens of the other when they met on the high seas or in the markets of a third party. Such were the first commercial treaties which made peaceful commerce possible. In time peaceful commerce took the place of these piratical expeditions. With the skill developed by long familiarity with the sea the Greeks built and sailed boats that surpassed in speed and safety those of any other nation. The Phœnicians found themselves crowded out of much of the business which they had controlled.

Characteristics of Greek industry. The most striking characteristic of Greek industry is the great artistic merit which their products possessed. Their wares have been considered beautiful by the peoples of every age, and they are still being imitated. Every ancient nation produced some wares that were as well made

as those of the Greeks, but none that were so beautiful. Just as the art, literature, and philosophy of the Greeks rises above that of any other ancient nation, so the art of its craftsmen shines superior to all.

The second characteristic which strikes us is the slight advance which the Greek craftsmen made over their predecessors. Their pottery was no better made than that of the Phœnicians, although it was much more charmingly shaped and decorated. Not a single great discovery or invention in technical processes has come from them. This is the more surprising in that they were such great thinkers along other lines.

The third characteristic of Greek industry is the small scale on which they produced their goods. Small shops were the rule. Industry was never organized on as large a scale as among their neighbors the Phœnicians. This may have been due in part to their temperament, which was more artistic than practical, or it may have been the result of the great poverty of the country in natural resources; without natural wealth in their own land it was difficult for anyone to accumulate enough wealth to establish a large industrial plant.

Characteristics of Greek commerce. Greek commerce was marked by much greater progress than Greek industry. First of all, the general use of money among the Greeks put them ahead of all their rivals. Then the Greeks built better ships than any



A GREEK GRAVESTONE

This illustrates the artistic merit of the Greek craftsman's work

other ancient nation and handled their ships better too. With these improvements the Greek mariners outdid the Phœnicians. The whole ancient world was bound together by commerce more than ever before.

TOPICS FOR DISCUSSION

1. Compare farming in Greece with farming in Egypt.
2. Are there in your town any shops or studios similar to the workshop of the Greek craftsman?
3. If you had lived in Ancient Greece what comforts that you now possess would you have been obliged to go without? What would you have used in place of sugar, coffee, and soap?
4. Why did the Greeks make so few inventions?
5. What is the difference between money and wealth? between money and capital? Is money always metal coins?
6. What advantages have metal coins over other forms of money?
7. How does a metallic currency make the accumulation of wealth easier?
8. How did the Greeks use their surplus wealth?
9. How does a modern business man use his surplus wealth?
10. What are the contributions of Greece to the development of industry?

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CHAPTER VI

THE ECONOMIC EMPIRE OF THE ANCIENT WORLD ; INDUSTRY AND COMMERCE DURING THE HELLEN- ISTIC PERIOD AND UNDER THE ROMAN EMPIRE

The Hellenistic period. *Relation of politics to economic development.* Up to this point in our study of the growth of industry we have ignored the political development which was going on at the same time. Each of these is an important part of the history of mankind and has greatly influenced the other. We have now reached a point where some knowledge of the political changes taking place in the lands about the eastern end of the Mediterranean during the third and fourth centuries B.C. is necessary to an understanding of the economic conditions of the time. Both the political and economic conditions which came into being at that time continued with comparatively little change until partially overthrown in the fifth and sixth centuries of the Christian Era.

Conditions in the fourth century B.C. Down to the middle of the fourth century the Greeks had been split up into small political units, and all attempts at permanent union among them had ended in failure. A succession of wars between the little commonwealths had served only to exhaust their resources. Farmers, artisans, and merchants had learned by bitter lessons the little good even a successful war could do them. At the same time the old vigorous simplicity of life and loftiness of thought were rapidly passing away. Persia and Egypt, each a rich country, had recently shown their inability to defend themselves.

Career of Alexander. At this moment there appeared in Macedonia—a half-Greek, half-barbarian country in northern Greece—one of the three or four great military geniuses in history,

Alexander the Great. Seeing the opportunity the situation afforded, he made haste to take advantage of it. With the aid of a highly efficient army left him by his father, Alexander conquered not only the Greek states about him but the Persian and Egyptian empires as well. Wherever he went he founded cities, some of them mere military stations, others trading centers so admirably situated for commerce that they continued to grow for centuries, long after the power which had brought them into being had crumbled into dust.

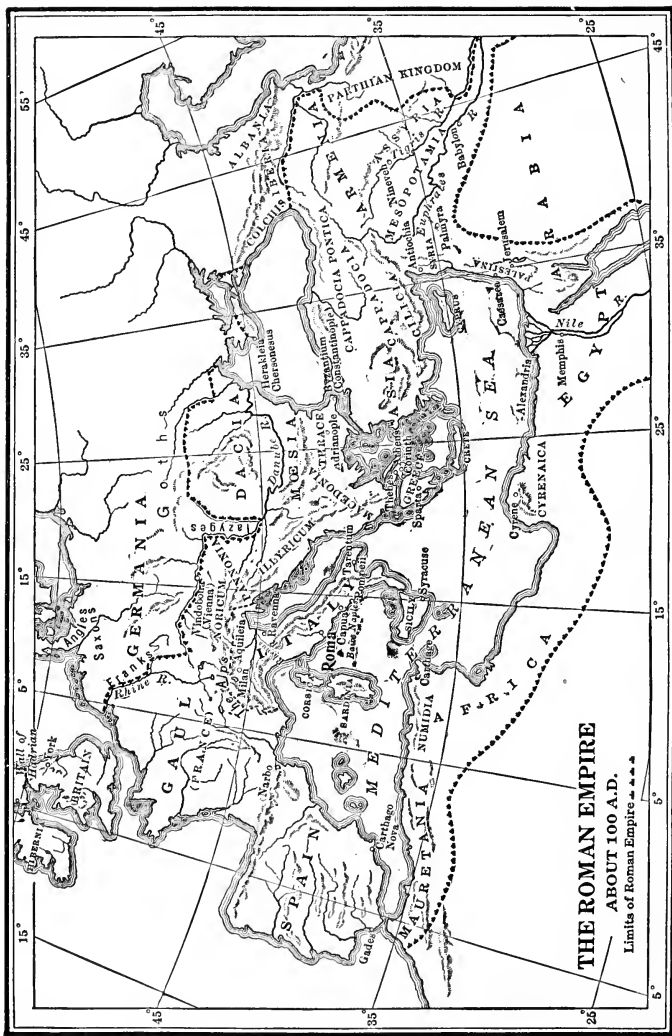
Effect of Alexander's conquests. The first effect of Alexander's conquests was to create an empire which included in one organization Greek, Persian, Phœnician, and Egyptian. The creation of this empire opened the Hellenistic period, during which the Greek and oriental civilizations were combined, freer commercial intercourse than had ever been known before came about, and industries were stimulated and improved by the greater interchange of goods. When the political bond had become a thing of the past, the economic interdependence which it had fostered still persisted. Athens continued to depend upon Egypt for necessities of life and for a market for her goods. Commerce was no longer an exchange of luxuries which might be cut off at any time without serious inconvenience to either party. The countries about the eastern end of the Mediterranean were united in what might be called an economic empire. The economic empire we shall take up in more detail in discussing the Romans, who carried it to the highest stage of development to which it attained previous to modern times.

Commerce. A great extension of commerce followed upon the conquests of Alexander. As the conqueror penetrated into the heart of Persia with his Greek army, he was followed by Greek traders and supply men. Wherever he established a city or a military station a demand immediately sprang up for Greek goods—for oil, wine, clothing, etc.; in fact, for everything to which the Greeks were accustomed in their home cities. To pay for these the soldiers used the spoils taken in battle or the liberal wages received from the tribute paid by the vanquished. The Greeks had been

taught by the poverty of their native land to strike a sharp bargain, and soon found trading with the wealthy and somewhat careless oriental more profitable than with their fellow-countryman. Immense fortunes—a thing unknown in Greece hitherto—were accumulated and brought back to Athens and Corinth. These fortunes, standing out in sharp contrast to the general poverty of Greece, preached the opportunities of the East to the ambitious. In consequence emigration to those parts steadily increased. Many who went never returned to their former homes, but formed centers of Greek influence in the regions where they settled. Owing to them, Greek financial methods as well as Greek art and philosophy gradually spread throughout the nearer East.

Industries. The effect of Alexander's conquests was greater upon commerce than upon industries. The methods and products of industry remained very much what they had been, but the quantity produced increased on account of the increase in trade, which opened up new markets. The papyrus of Egypt was used everywhere as writing material; grain from Egypt and the Black Sea region fed the Greeks; Athenian oil, wine, and pottery were sold in the cities of Egypt and Asia Minor. This encouraged production on a larger scale than was formerly profitable.

The Roman Empire. *Political history of Rome.* Rome, the city which was to make herself the mistress of the world, began as the fortified stronghold of a group of shepherds. Like the Greek shepherds they were not averse to quarreling with their neighbors and sometimes plundering them. At one time, however, these neighbors proved too strong for them, and they themselves became a subject people. After a short period they rose against their conquerors and entered upon a series of wars which did not end until all Italy was at their feet. As undisputed mistress of Italy, Rome aroused the fears of Carthage, the greatest power in the western Mediterranean. This city, situated in northern Africa, held sway over half of Sicily, Sardinia, and Corsica as well as the ports of Spain, and controlled the trade that passed through the Strait of Gibraltar. Carthage alone, of all the colonies founded by the Phœnicians, had attained political importance. She was



rich in grain lands, manufactures, and tribute from subject states. To her the rapidly extending power of the Roman Republic seemed a menace, and the rivalry of the two resulted in wars for supremacy which were long and exhausting. In the end the victory came to Rome, the poorer but more vigorous state. Before the contest was finally decided Rome had been drawn by her commercial relations into the quarrels then raging among the degenerate Greek states into which Alexander's empire had divided. After intervening several times to protect the lives, property, and interests of Roman merchants, Rome finally accepted the fate which destiny thrust upon her. She made Roman provinces out of the fragments of the Greek empire and so set up therein some equitable and stable form of government. Increased wealth and responsibility proved too much for the republican form of government Rome had established, and she therefore accepted an absolute ruler strong enough to control the corrupt and self-seeking political parties. From this time on, until its fall, Rome was an empire divided into twenty or thirty provinces ruled from the imperial city by the emperor, through his representatives.

Economic development. The Romans passed through several stages of economic development corresponding to their political development. They entered Italy as a primitive people. In the Tiber valley they became shepherds. As the increasing population



A ROMAN SOLDIER

created a demand for more food, the lowlands were turned into farms and the shepherds took their flocks to the hills. As the population continued to grow, the Romans faced the necessity of sending part of their people away to colonies as the Greeks had done or increasing their territory. They chose the latter alternative, and the conquest of Italy was the result. Unfortunately they were so unwise in their method of handling the conquered land that a large part of it fell into the hands of a few and so did not relieve the grinding pressure on the poor. Commerce and manufacturing coming into prominence very late in Rome did much to relieve this economic situation, as it had formerly done in Greece. From being a self-sustaining agricultural community, Rome became a great commercial and financial center, depending upon her distant provinces for food and supplies and in return providing the capital needed to develop their resources. The Roman Empire—comprising within itself Greece, Egypt, Persia, and the African coast that Carthage had once ruled—became the heir of the industrial skill which all the ages had brought into being. The Roman conquest of western Europe transmitted these accumulated treasures to the modern world. It is this empire, with its almost modern problems, in which we are now most interested.

The economic empire. The characteristic mark of a political empire is the union under one government of people of many races, languages, and traditions. Just so an economic system which unites many regions, each with its own set of natural products and industries, into a coördinate whole whose various parts are connected by trade and dependent upon each other for the necessities of life may properly be called an economic empire. We will now endeavor to trace how the political empire of Rome helped to make an economic empire possible. First of all, the empire maintained order within its boundaries and protected the people from the depredations of the surrounding uncivilized tribes. This was of the utmost importance, because the farmer or the craftsman will not produce any more than can be used immediately if he is likely to have all he has put aside carried off by robbers. No commerce of any account can exist under such conditions, and

consequently the tendency will be to form small, self-sustaining communities which are the exact reverse of the economic empire. Secondly, wherever Rome conquered she built excellent roads, which greatly facilitated commerce and made it safe for communities to specialize in production. Thirdly, she developed and enforced a fair and uniform commercial law for her dominions, which encouraged men to invest their capital in business enterprises, confident that this law would protect them from trickery and double dealing. Fourthly, the freedom from the expense and loss of frequent wars allowed capital to accumulate as it had never done before in the history of the world.

To see how the political empire brought about economic interdependence is well brought out by the grain business. Before Rome had established her sway over the lands about the Mediterranean the population of Italy was dependent in the main upon the farmers of Italy and Sicily for their supply of grain. These farmers raised grain at a great expense of labor, as much of the land was not well suited to this crop, and the consumers were obliged to pay a correspondingly high price for it. With pirates and the fleets of hostile nations liable to capture grain ships from the East, no reliance could be placed on the imported supply. Furthermore, there was no large amount of capital to invest in buying Egyptian wheat and transporting it to Rome. After the establishment of the Empire and the restoration of order in the Mediterranean regions which accompanied it, Rome was fed on grain from Egypt and Thrace, where, on account of the better soil, it could be produced more cheaply.

Agriculture. The wealth of any country depends largely upon what is taken out of the earth in the form of metals, minerals, and agricultural products. Perhaps it was an understanding of this fact that caused the Romans to hold agriculture in such high esteem. If a noble wished to engage in business the only honorable occupation open to him was agriculture. Roman poets sang of the charm of country life, and Roman philosophers lamented the movement from the country to the city. Agriculture passed through several stages between the founding of the city, in the eighth century B.C.,

and the overthrow of the great Roman Empire, in the fifth century of the Christian Era. The earliest records indicate that most of the arable land of the Romans was divided up into small farms which were cultivated by their proprietors. Each household was self-sustaining. Great simplicity, even poverty, prevailed among the people generally, for even the hardest work enabled the farmers to wring but a scanty living from the soil.

After five hundred years, during which the poor farmers who composed the citizen army of Rome had conquered Italy, the movement to the city began. This was due in part to other causes than simply the love of city life which a broader knowledge of the world had engendered. The small farmers were being driven from their farms by economic conditions. The state lands obtained by the conquest had fallen largely to the share of a few rich men. The great estates formed out of them were cultivated by slave labor. The products raised on such estates could be sold in the market for less than the products of the small farms. The big man had capital to invest in better tools as well as slaves, and this all tended to reduce for him the cost of production. The small farmer frequently came home from the war to find his farm buildings destroyed and his live stock driven off. When he tried to borrow money he was obliged to pay exorbitant interest. It is not surprising that there was a strong tendency for the small farms to give place to large estates and the small farmer to drift to the city.

Capitalist farming. The old-fashioned small farm was run with the idea of providing the grain, wool, wine, and hides which the family needed for their food and clothing, and enough surplus of one or more of these products to exchange in the market for metal tools and other similar articles which could not be so easily made in the household. Little or no money was handled in the course of the year. The only capital which the farmer invested in his farm was the surplus grain or wool of which we have just spoken. The introduction of large estates was accompanied by a great change in farm management. The owner of such a place invested large sums in slaves, equipment, orchards, and vineyards, and he

expected to make a profit on his investment. Farming of this type is known as capitalist farming.

Management of an estate. In managing one of these large estates two objects were kept in view. In the first place, sufficient of the ordinary foodstuffs must be raised to make the household self-sustaining. By this expedient the slaves were fed and clothed without the direct expenditure of money. Secondly, a crop or crops must be produced which would find a steady and profitable market. Two crops which met the latter requirement were the vine and the olive. As both of these required a heavy investment before they gave any return, there was little danger of prices being run down by competition from the small-scale producer. Italian wine grew in favor the world over until it ranked with Greek wine in popularity, and oil was as necessary to the Romans and the Romanized barbarians, their subjects, as to the Greeks. Close to the cities gardening proved very profitable. Such branches of industry as grazing and pasturing could be advantageously carried on by a senator at Rome, who obtained for little or nothing, through political influence, extensive government lands. These lands were uplands of small value for cultivation. Here the flocks were pastured during the summer, and in the winter they were taken down to roam over the fields after the crops had been gathered. An interesting list is given by Cato of the income-producing sections of an estate in the order of their value, running as follows: the vineyard, the irrigated vegetable garden, the osier bed (a marshy spot where reeds for making baskets were grown), the olive yard, the meadow, the grain land, and the woodland.

Methods of farming. The Roman methods of farming were the best known to any ancient people. The special care required by the different crops was thoroughly understood. To restore the fertility of the soil the fields were allowed to lie fallow for a part of the year or were spread with manure or marl, a clay containing a large amount of lime. Rotation of crops was practiced among the Romans. This is an arrangement by which the same crop is never planted in a field for two years in succession. By changing the crop planted each year the land is not exhausted.

Labor. Slaves were plentiful and consequently very cheap in the Roman markets as long as Rome was engaged in successful wars and continually bringing home captives. Such labor was employed on the plantations while this state of things lasted. The slaves worked under superintendents and overseers who were themselves often freedmen. Not all the work was done by slaves owned on the estate. Such tasks as picking olives or grapes, in which a great number of workers were required for one season of the year only, were let out to contractors who furnished their own labor.

The coloni. The peace so long maintained by Rome brought about a condition in the labor market which seriously embarrassed the capitalist farmer. The supply of slaves fell short of the demand. Prices for them went up until it was doubtful if the purchase of slaves was a profitable investment. Free labor would seem the natural alternative. Free labor meant a constant outlay of cash in wages, and cash was decreasing rather than increasing with the growth of the Far Eastern trade, which drained gold and silver from the Mediterranean region to pay for the silks and jewels which the wealthy citizens felt necessary to their happiness. Under these conditions plantations became unprofitable. The estates were divided up. Small farms were created which were rented for a money rent to free farmers. These farmers were known as *coloni*. The rest of the estate was reserved for the owner or rented as a whole to some capitalist. Such estates existed in the second century of the Christian Era. In the next two hundred years a change occurred for which we can give only one explanation: coins had become so scarce that farmers were obliged to return to a system of barter. The *coloni* substituted rent in kind for money rent and were forbidden by law to leave the estates where they were employed. Part of each year they must cultivate the lands of the master as part payment of their rent. The proprietor of the estate provided them with tools and stock and helped them through bad years when drought or other adverse conditions brought them near to starvation. He also protected them from the raids of lawless invaders which the crumbling empire was

powerless to prevent. An estate farmed in this way was known as a villa.

Mining. There was a tendency in Rome to regard mines as the property of the state. State mines were let out to contractors, who worked them with a gang of slaves. The opportunity to make money at this was not sufficiently great to attract the ablest men, and consequently no noticeable advance in the mining industry was made. Not even enough ore was mined to supply the precious metals required to meet the needs of coinage and industry.



Courtesy of Metropolitan Museum of Art

ROMAN GLASS VASES. (FIRST CENTURY AFTER CHRIST)

Handicrafts. It has been truly said that the Roman Empire was the heir of all the ages. When the Romans conquered their more civilized neighbors they brought back to Italy innumerable captives skilled in the industries of their native lands. There were Greek potters and stonecutters, Phœnician metal-workers and dyers, Babylonian textile-workers and gem-cutters, and Egyptian glass blowers. These men were sold as slaves and were taken by their masters to various parts of Italy, Spain, and Gaul, where they spread a knowledge of the crafts among the less skillful natives.

The Romans showed little aptitude for the industrial arts and were quite content to leave them to the conquered races. These showed great skill in handling the crude tools which had been

handed down to them from earlier ages, but they made no important inventions and few improvements in methods of work. In artistic ability the Spaniard, Gaul, or Egyptian was far behind the Greek, and as the Romans to whom he catered had little refinement of taste the products of the craftsmen's shops deteriorated rapidly in both design and workmanship.



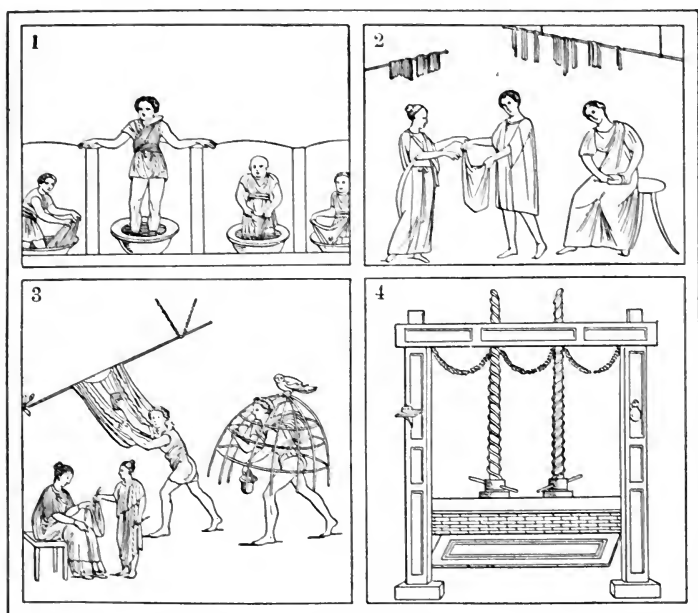
Courtesy of Metropolitan Museum of Art

ROMAN COUCH, SEAT RESTORED. (FIRST CENTURY AFTER CHRIST)

Small-scale production. The slave set up in business by his master or the freedman starting in for himself was in no position to start on a large scale. Little shops very much like those in Athens were the rule. As against thousands of small shops, there were here and there a few establishments conducted on a larger scale and capitalized by wealthy men or women. One of the favorite business ventures for a woman was a brickyard. A publishing house at Rome employed a large number of slaves, who turned out many copies of the same book at once. The method

used is rather interesting. One slave read aloud while the others wrote the book from his dictation. Establishments like this, which approach our smaller factories in size, were marked exceptions to the general rule.

Organization of workers. The workers in the handicrafts were organized into semireligious societies called guilds. Women as



DYER AND FULLER'S SHOP, POMPEII, A.D. 79. (AFTER OVERBECK)

1, dyeing; 2, cloth hanging up to dry; 3, brushing goods; 4, cloth press

well as men belonged to these clubs. The original purpose of these associations seems to have been to worship the patron god of the craft. The social side of the guild soon overshadowed the religious. Funds were gathered to provide funerals for deceased members, and gatherings of the guild members were held where trade secrets were handed on from one to another. The Roman guilds have been compared to the medieval guilds and the modern trades unions,

but in two respects at least they were very dissimilar—they never attempted to raise the price of the commodities their members produced or to shut newcomers out of the trade.

Foreign commerce. Commerce is considered under two heads: foreign and domestic. It is one of the characteristics of the Roman



Courtesy of the Metropolitan Museum of Art

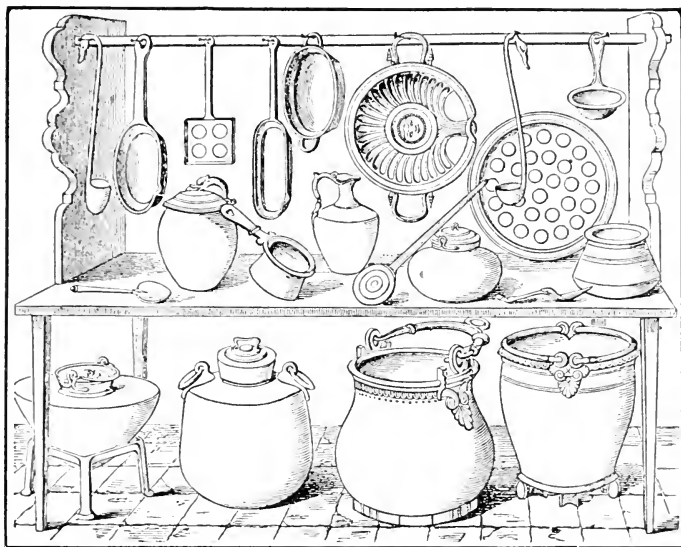
ROMAN MIRROR (RESTORED)

Empire that its foreign commerce amounted to almost nothing in comparison with its domestic commerce. Except on the east the Empire was encircled by less civilized peoples, who had little to offer in the course of trade. Such natural products as amber from the Baltic Sea or ivory from Africa were exchanged for iron weapons and utensils made at the forges of Italy or Spain, very much as the Indians of North America traded furs to the English settlers for firearms and kettles. On the east a different situation existed. Beyond the mountains and deserts which cut off the Tigris-Euphrates valley from

the rest of Asia lay a country which was already entering upon a high stage of industrial development. This was China. China had a practical monopoly in the production of silk. Jade and precious stones also came from the Far East. This Eastern trade had a very bad effect on the Empire, because the only things which the Orientals desired in exchange were gold and silver, which Rome could ill afford to spare because her production was so small. As soon as more gold and silver went out of the country than was

mined, the Romans found all their business transactions seriously hampered for want of currency.

Domestic commerce. The great domestic commerce of the Roman Empire was made possible by the security afforded the merchant at sea and the excellent roads provided for him on the land. The skill in shipbuilding which had been developed among



ROMAN COOKING UTENSILS

the Greeks and the Carthaginians was at their service, and they were capable of keeping the sea clear of freebooters. Water routes were the cheapest means of communication, because ships of the smallest class carried far more cargo than several wagons. The great disadvantage of the water route was that during the winter the Mediterranean became so rough as to be quite unsafe for the small craft of the time. For this reason the roads which spread out from Rome in every direction were more used than they would have been had the water routes been open at all seasons of the year. These roads were so well built that many of them still

survive in spite of fifteen centuries of hard usage and neglect. Although the roads were so good, carrying goods over them was an expensive matter. Vehicles were clumsy and the horses small and slow, and the roads were seldom sufficiently well policed to be entirely free from robbers. In the prosperous days of the Empire people were able to pay the heavy freight charges, but when hard times came each locality began to produce what was necessary for life, and commerce slowly died.

Goods exchanged. There are certain articles—oranges and gold, for instance—that most people must either obtain by trade or do without, and this is true the world over. Things with which nature has endowed certain localities are the first products to be traded. In the Empire tin, lead, and iron were brought to Rome from Britain, iron from Spain, and copper from the region of the Black Sea. The second class of articles to be traded are those things which have been localized by the growth of special skill among the workers of some district. The large export of vases from Athens, glass from Egypt, and woven goods from Syria and Babylonia, to other parts of the Empire, was due to the technical expertness of the craftsmen of those countries. A third set of commodities are localized and enter largely into trade only when commerce is sufficiently free to make it profitable. An excellent illustration of this class of goods is the case of wheat, which has already been mentioned. When Italy was shut off from the rest of the world commercially, Italians raised with much labor, in soil that was poorly suited to the crop, all the wheat that was eaten on the peninsula. When Rome's relations with the eastern Mediterranean assured an uninterrupted commerce with Egypt, the poor wheat fields were turned into vineyards and olive yards, and Rome depended upon Egypt for her supply of cereals. Egypt was so much better suited to the production of grain that the cost of production in labor and land, plus the heavy freight, made Egyptian wheat less expensive in Rome than the home product.

Capital employed in commerce. Commerce reached great dimensions in the most prosperous days of the Roman Empire, not only because of the security afforded life and property, the good

roads, and the localization of industry but also because of the large capital which the Romans learned to bring together for any commercial enterprise which promised good returns. Companies were formed by means of which several persons contributed toward the capital necessary, and banks and money lenders lent if reasonable security was offered. During the third and fourth centuries considerable wealth was used up in unprofitable wars and extravagant living. In this way the amount of wealth which was available as capital decreased, and this seriously hampered business.

Fall of the Empire. When the political empire of Rome fell before the onslaughts of the barbarian invaders in the fifth century, the economic empire which it had sheltered had already fallen into decay. This was due to many causes. First of all, the drain of precious metal to the East deprived the Empire of much-needed currency. If a credit system had been evolved to take the place of metallic currency, Rome might not have been embarrassed by the shortage of metal, but unfortunately nothing of the kind was done. Another cause of bad conditions was the unprofitable investment by the government of much of the capital of the ancient world. A comparatively large share of the surplus wealth of the ancient world flowed to the imperial city in the form of taxes and tribute. Part of this was spent on the army, the navy, the roads, the improvement of harbors, and other public works which increased the prosperity of the Empire. A large part of the money, however, was spent on temples, monuments, public baths, and the like, and another portion purchased grain, which was given free to all Roman citizens who wished it. All such investments were very much like burying the capital of the Empire, as far as business was concerned. The grain doles were especially bad, as they served to keep thousands of able-bodied men in idleness at the expense of those who were working.

Labor. Labor was invested as unprofitably as capital. The households of the wealthy and the workshops of the poor employed at least ten times as many persons as would be required to accomplish the same tasks now. If even the simplest labor-saving

appliances had been introduced, the same results would have been attained with a fraction of the labor.

With the fall of the Roman Empire in western Europe the hands of the clock turned back a thousand years. Small, self-sustaining agricultural communities, such as had existed before the Empire rose, took the place of an international system fed by the steady flow of commerce. It was six hundred years before men began to build up again with slow and painful effort the fabric which they had so wantonly destroyed.

TOPICS FOR DISCUSSION

1. What were the effects of Alexander's conquests upon the commerce and industry of Greece?
2. What service did the Roman government render commerce? industry?
3. Compare the Roman system of agriculture with that of Greece; with a small American farm; with a ranch.
4. Why did slavery flourish in the Roman Empire?
5. Which rendered the greatest service to the development of industry—Greece or Rome?
6. When the Roman government could no longer keep order in the Empire, what was the effect upon the merchant, the craftsman, the landowner, the farmer, and the slave? Would the same changes come here if our government decayed?

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CHAPTER VII

INDUSTRY AND COMMERCE DURING THE MIDDLE AGES; ENGLAND

Meaning of the term "Middle Ages." The term "Middle Ages" stands for two things. First of all, it means a period of time to which various opening and closing dates have been set by different writers. For our purposes the period begins with the date 476, when the Roman Empire in the west ceased to exist, and closes with the year 1492, when the discovery of the New World brought into play new political and economic forces. Secondly, the term stands for something more than ten centuries: it stands for a stage in the evolution of mankind. During this thousand years the Teutonic peoples—a great family of races whose descendants form the European nations of the present time—were receiving their education. Greece, Rome, even far-off Egypt and Babylonia, were their teachers. Most important of all, the Christian religion was given to them by the efforts of zealous missionaries. A race little beyond the primitive stage of development, with, however, certain marked characteristics, found itself amidst the wreckage of a civilization in many respects far more advanced than its own. The Middle Ages stands for the combining of these elements—ancient civilization, Christianity, and the Teutonic peoples—into modern European civilization.

Political history of the Middle Ages. The first political event of importance was the event with which the period opened—the Teutonic conquest. During the fourth and fifth centuries a large number of Teutonic tribes—the Northmen, Franks, Angles, Saxons, Jutes, Burgundians, Lombards, Goths, and others—were located in lands just outside the northeast boundaries of the Roman Empire, in what is now Denmark, Germany, Austria, and southern Russia. Needing more territory and being crowded on

the east by non-Teutonic tribes, they looked with covetous eyes upon the provinces near them which Rome was holding with an ever-weakening grasp. Their repeated attacks kept the legions of the frontier occupied for a century until, exhausted by blows from without and lacking support from the government within, they gave way before the barbarians. Greece, Italy, Gaul, Spain, northern Africa, and Britain—all falling victim of the invader, temporarily—were plundered.

Rise of the Teutonic states. The invaders were looking for new homes as well as plunder, and one tribe after another tried to appropriate to its own use Italy, Gaul, and the rest of the conquered empire, only to be driven on or reduced to subjection by the tribe behind. In 800 Charlemagne, king of the Franks, succeeded in bringing under his sway most of the peoples living in what is now Italy, France, and the western part of Germany and Austria. In the hands of his grandsons his empire split up into three states which correspond roughly to the modern states of France, Germany, and Italy. By the year 1000 the ancient Roman Empire had been divided up as follows: the Mohammedans held most of Spain, as well as Syria, Arabia, Egypt, and northern Africa. The Eastern Empire (frequently called the Greek, or Byzantine, Empire), with its capital at Constantinople (Byzantium), had reconquered the southern part of Italy and the island of Sicily, as well as Greece, from the invaders. The many semi-independent states of Italy and Germany had been brought together under one ruler, and the whole was known as the Holy Roman Empire. In the old province of Gaul the Kingdom of the Franks held together Flanders, Normandy, Brittany, etc. in very much the same unstable union. In each case the central government exercised but a limited authority over the inhabitants of the subject states. On the east the Slavs and other non-Teutonic peoples had formed a row of states which separated the rest of Europe from the Eastern Empire. The British Isles had been partially overrun by the Anglo-Saxons and the Northmen. The rest of the period (A.D. 1000—A.D. 1492) was occupied by the gradual rise of England and France to the condition of well-organized

nations, the steady disintegration of the Holy Roman Empire, and the expulsion of the Moors from Spain by the Christian inhabitants. During the eleventh and twelfth centuries a series of expeditions by the Christians of all nations against the Turks for the recovery of the Holy Land served as a diversion from local wars and gave an impetus to commerce. These expeditions were known as the Crusades.

Political and economic conditions in Europe during the Middle Ages. *Immediate effect of invasions.* The first effect of the Teutonic invasion of the Roman Empire was the destruction of life, property, and the fabric of society. The new rulers of the land were a half-savage people. What they liked they took. As no man could be sure of enjoying the fruits of his labor, the work of the craftsmen dwindled to the production of the bare necessities of life. The capitalist tied his money in a napkin and buried it lest it attract the cupidity of the ruthless masters of the land. Roads and bridges were not kept up. Even utter neglect could not entirely destroy the roads which the Romans had built so well, but the loss of bridges cut off one district from another, and fallen trees and the accumulation of rubbish rendered roads impassable. Under such conditions commerce practically ceased. Each village and hamlet became a self-sustaining community, providing itself with the necessities of life and doing without the luxuries. Wherever agriculture and the handicrafts were controlled by the conquerors they were very crude. Currency largely disappeared and the more primitive system of barter took the place of the use of money. Again, natural economy appeared in regions from which the Roman conquest four centuries before had driven it. Rulers were once more forced to collect their taxes in labor, grain, wool, and cattle.

Contributions of the Teutons. The Teutons were not only a destructive but also a constructive force in the society into which they came, wholly uninvited, to take their place. They had very definite ideas as to the legal, political, and economic relations of men to each other which they, as conquerors, were in a position to force the rest of the population to obey. To the Teuton law was

personal in its application, while to the Roman it was territorial. Wherever he went the Teuton believed he should be tried by his own law. The Roman, on the other hand, believed that a man should be judged by the law of the land in which he happened to be. Under the Teuton theory it was possible later for Italian merchants residing in France to win from the rulers of the country the right to hold their own courts for the trial of cases arising among them, or for the German merchants in London to enjoy the same privilege, a thing incomprehensible to the modern mind.

Personal political relationships. Similar to the Teuton's conception of the personal application of law was his theory of political relationships. Pepin was not king of France, but king of the Franks. The Franks were not subject to the government, but subjects of the king. What is stranger still is this, that some of them were more his subjects than others. Those that stood nearest to him were his vassals; the others were only his subjects because they were the vassals of his vassals and so, indirectly, his vassals, too. Over his immediate vassals the king was supposed to have a great deal of authority, because to them or their ancestors he or his ancestors had given large landed estates. In return for the land they were supposed to be loyal to him, obey him, and fight for him. But as they had subdivided much of the land they received among their vassals, they were as likely to take the field against the king as for him, because they had very nearly as large a fighting force at their command. Such ideas as this made it very difficult for the king to enforce any of the laws he made. Worst of all, these great vassals were continually fighting each other, or their lord, or the king, or their own vassals. Such lawlessness prevailed that neither life nor property was safe. Of all men the merchant was the most in danger of robbery, because his wealth consisted of movable goods and he was less practiced in the art of war than most men of the time. It is plain to be seen how serious was the effect of such conditions upon commerce and industry.

Economic conceptions of the Teutons. In economic matters the Teutons were as far behind the Romans as they were in their

conceptions of law and government. Although they had used the Roman coins in the trade they had carried on with the Romans before the conquest, they had not learned to think in terms of money, and they easily relapsed into a system of barter when currency became scarce. Their agricultural methods were crude, as were all the handicrafts, with the possible exception of their iron-work, which, among the Northmen, at least, had reached a somewhat advanced stage of development. They seem to have had a complicated arrangement of tribal landholding and farming under which pastures and woodlands were owned in common by all the members, and the labor of cultivation on the arable fields was performed by a semifree class of workers. We shall understand this better when we take up in detail the small farming communities known as manors into which these tribal farms grew after the conquest.

A universal church and language. Although the single state of Rome gave way to a group of nations, a complicated tangle of legal relationships, and economic retrogression, two bonds remained to hold together this chaos. One church—that of Rome—extended its authority wherever Christianity spread, and one language—Latin—was spoken by all educated people. Through these two agencies something of the Roman culture was handed on to the conquerors in spite of their indifference, even unwillingness, to receive it.

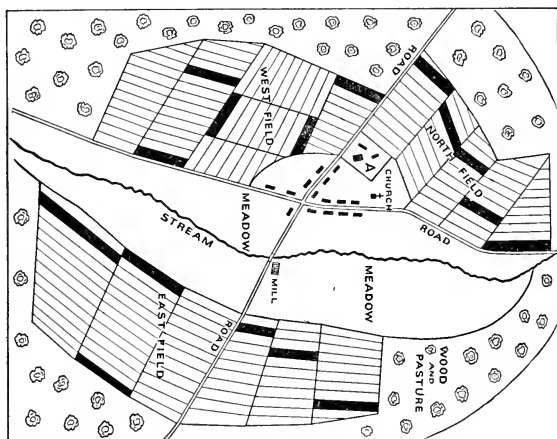
England taken as a type. In studying the economic development of Europe during the Middle Ages it seems best to study one country in detail and compare the other states with it. As more is known of the industrial conditions in England than in the other countries, England has been selected for this special study. The same institutions appeared everywhere with but slight variations. When we have become acquainted with the English type, it will be a simple matter to grasp the differences which France, Italy, Germany, and the Low Countries have to show.

Political development of England. The history of the British Isles during the Middle Ages is very like the history of the Continent. In the first century of the Christian Era the Roman legions

conquered the island of Britain as far north as the present boundary between England and Scotland. A Roman province was created out of the conquered territory, roads were built, cities sprang up about the camps, and some of the fertile lands were appropriated and converted into villas. Coal, tin, iron, and lead were mined. Commerce with the mainland was established, and manufactured goods from all parts of the ancient world were brought to Britain in exchange for the natural products of the country. In 410 the Roman legions were withdrawn from Britain for service nearer home, and the civil population of the territory was left to its own devices. The legions had been kept busy fighting off the Picts from beyond the Great Wall in the north, as well as the Saxons, who repeatedly made attacks on the eastern shore. After the legions had gone the Britons were completely at the mercy of their enemies. Angles, Saxons, and Jutes, pouring in, killed or drove back the native population. The cities were partially destroyed and left to fall into decay, for the invaders had a strong love of open spaces and were unwilling to live within town walls. In time a rough order was restored, agriculture improved, and the crafts began to advance. Then a second invasion threw the land back into a state of disorder. Those responsible for this invasion were the Northmen—a hardy, seafaring people ever ready to engage in commerce or piracy, depending on which offered the best returns. At first they came to the shores of England to plunder, but, attracted by the natural riches of the country, they soon began to settle there. As they were much like the Angles and Saxons in their national customs, their coming had only a temporary effect upon England. In the eleventh century the country was to suffer still another invasion. This was made by a more advanced people than the former invaders—the Normans of northern France. Led by William, Duke of Normandy, they subdued the whole of England and gave the country what was for the time a well-organized government.

Conditions in 1066. When the Normans landed in England in 1066 they came to a country where much larger districts were given over to marshes and forests than at the present time. Here

and there the mineral wealth of the island had been scratched, but that was all. The great industry of the land was farming. During the centuries of the conquests small farming communities had come into existence in most of the agricultural districts. These rural organizations the Normans modified somewhat and called manors, after similar organizations on the Continent. Towns were few and very small. England had almost no commerce except in



MAP OF A TYPICAL MANOR

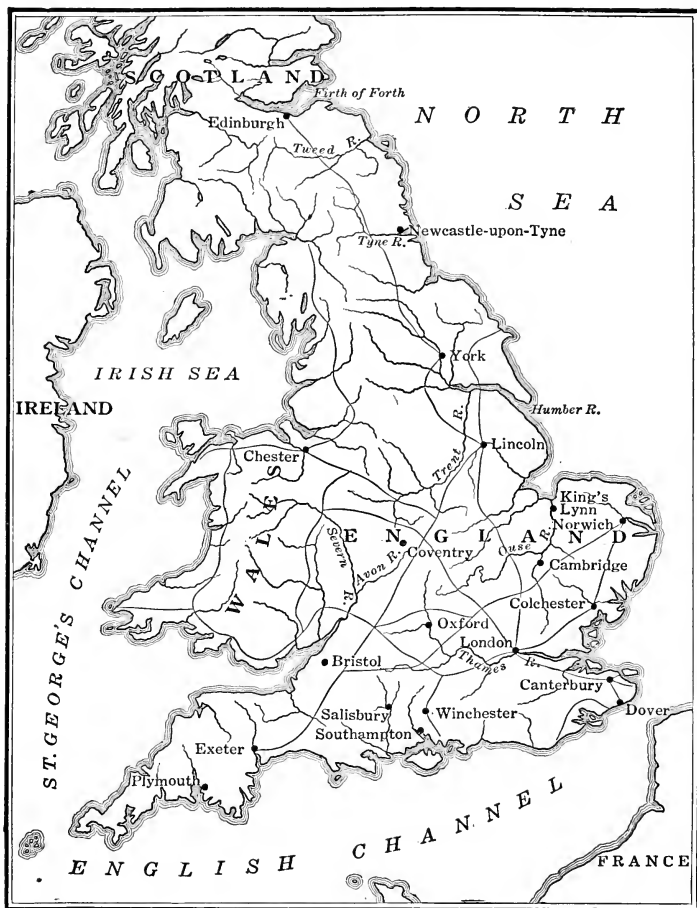
The dark strips indicate the holdings of one man; A is the manor house, with its outbuildings and inclosure

salt and iron—necessities which are not found everywhere—and in a few luxuries which, on account of their small bulk, are easily transported.

The manor. As agriculture was the most important industry in England during the Middle Ages, the manor is of foremost interest to us. Manors were estates varying in extent from a few hundred to several thousand acres, the inhabitants of which were almost entirely self-sustaining; in fact, the inhabitants of the manor were much like one great household as far as their economic relations were concerned. A typical manor contained from six hundred to a thousand acres and a population of twenty to fifty families.

Natural divisions on manors. In choosing a place for settlement the Angles and Saxons usually picked out a spot which offered them those natural advantages which their method of farming required: a stream with a meadow bordering it; back from the stream drier land, which would serve as grainfields; and woodlands, which furnished them with timber. As England is generously supplied with streams in gently sloping valleys, on either side of which rise wooded hills, such locations were plentiful.

Division of land among inhabitants. The farm land, woodland, and meadow were divided up among the inhabitants partly according to their rank and partly according to a traditional system which early lost all significance. The lord of the manor—who might be a simple knight, a duke or high-church official, or even the king himself—used a share of the manor known as the demesne. This consisted of a number of acres on which were situated the manor house and such outbuildings as sheepfolds, barns, granaries, dovecotes, dairies, and the like. In addition the lord had fields, either separate and inclosed or, more likely, intermingled with the fields of the other inhabitants of the estate. The lord also had large claims to the timber, pasturage, and hay on the manor. The rest of the population of the manor was divided into three classes—freemen, villains (or serfs), and slaves. The last-mentioned class, the members of which belonged directly to the household of the lord, was rapidly disappearing. Most numerous of all were the members of the second class, which was divided into two groups, the villains proper and the cotters. In the first group were those who held from five to thirty acres of land and owed correspondingly heavy dues to the lord for it, and in the other, those whose holdings were five acres and less. Between the freeman and the villain one clear distinction only existed: the freeman was at liberty to leave his land if he chose, while the villain was not. As a rule the freemen held larger tracts of land than the villains and paid the lord in produce or money for the use of their holdings instead of in labor, as did the villains, but this was not always so. Along with the holdings of farm land which each possessed went rights in meadow and woodland.



A MAP OF ENGLAND IN THE MIDDLE AGES SHOWING ROMAN ROADS AND THE MOST IMPORTANT MEDIEVAL TOWNS

Tradition and the method of farming employed on the manor determined that the farm land should be apportioned in a very clumsy way. All the farm land was divided into three fields, in each of which a different crop was planted. Each of these fields

was subdivided into a vast number of narrow strips separated from one another by a narrow line of grass or a tiny ditch formed in the plowing. These strips were given out in turn to the landholders of the village, so that a man holding thirty acres would have at least thirty strips in different parts of the three fields, a third of his holdings being in each field. What is more, the lord's farm land was scattered about in the same way. How wasteful of land and labor this was it is plain to be seen.

Let us turn for a moment to the map of a typical manor on page 112. Here we find the stream, with the natural meadow on either side, running through the middle of the district. Through this stream, at a point where it is easily forded, a road crosses. Not very far along another road intersects the first, and at the crossroads are the huts and tiny inclosures of the villagers. Down these roads the farmers go to the fields in the early morning with their oxen and tools. Very rarely strangers from the outside world pass along—a noble with his retinue going to court to pay his respects to the king, or a group of merchants traveling to a fair. If the lord of the manor is one of those fortunate beings who have hundreds of manors, his coming to the manor house with his family and servants and men at arms would be a great occasion. We can imagine the excitement among the people when one of them catches the first glimpse of his party coming out of the woods. Often the first person to see the approaching horses and riders would be the swineherd, who is watching his charges in the woods while they root for acorns and other food among the dry leaves and underbrush, or the village shepherd, who is protecting his sheep from wild animals while they crop the grass on an unwooded patch of hillside. As the party nears the lord's dwelling the villagers gather at a respectful distance to bow and stare, while the lord's representative, the bailiff, advances to greet his master. The priest also crosses the churchyard to pay his respects to the man in whose hands rests largely the fate of all those now gathered about him.

Relation of villagers to lord. The power of the lord over the rest of the group, of which he formed a part, was due to the economic

position which he occupied among them. To him, in theory, the whole manor belonged. More than this, by the laws and customs of the time the villains, including the cotters, were unable to leave their holdings without his permission, to sell anything without paying him a fee, or to allow a daughter to marry or a son to enter the priesthood without his consent. In return for the holdings which they farmed each was obliged to work on the demesne a certain number of days every week, usually three for the villain and one for the cotter. They must also present the lord at Christmas and Easter with gifts from the produce of their own lands. The freemen were a little better off, as they could give up their land if they chose and go where conditions were more favorable. Sometimes they paid all their dues in the form of produce or money, although they seldom escaped laboring for the lord at seasons of special pressure, such as planting time and harvest. In some cases they did the week's work on the same terms as the villains. If there was a mill on the estate this was the property of the lord, and all must take their grain there to be ground and pay monopoly prices for the privilege. By these customs the lord was provided with laborers to till his land without paying in money or produce for the service he received and laborers had the use of land without paying a money rent, as is now customary. This arrangement might seem fair, on the whole, if we were not driven to suspect that much of the land had originally belonged to the villains, who were now permitted to use it on such harsh terms. This conclusion is made the more probable by the fact that the villains still retained certain rights even as against their lord. A villain who paid the customary dues could not be put out of his holding. If any question arose as to what was due from any man, the question was settled by a court composed of a number of his neighbors, and not by the lord. No doubt the lord would have great influence over such members of the court as were more anxious to curry favor with him than do justice to their fellows, but on the whole substantial justice was done.

Organization of labor. It was no small matter to organize and direct the labor which was due the lord and to see that the demesne

was properly cultivated. This task fell to the bailiff. He must schedule the days of labor due from the different landholders so that they would fall when help was needed. The services must be distributed so that there should not be too many men on hand one day to keep busy and no one the next to carry on the work begun. Plowing, harrowing, planting, and harvesting must all be supervised and directed. Most of all, men who had little more incentive than the slave must be kept at their tasks. Under such conditions one would expect the bailiff and his charges to degenerate into slave driver and slaves, and perhaps they might have if another age-old custom had not entered into the situation. The villains were in the habit of choosing one of their number as reeve, or foreman. This man was responsible for the work of the group which had chosen him. He, as well as the bailiff, must keep an account of the work done by each man, and at the end of the week the two tallied up their accounts. This gave the villains a sense of responsibility in regard to their work which slaves could never have. In it we may see the germ of the representative system of government which originated in England.

Labor on small holdings. With three days each week given to the lord it is hard to understand how the villain managed to farm his own land. The explanation lies in this: In the households of most villains there were several men and boys able to work. As the work of only one man was required in return for the holding, the rest of the household were free to cultivate their own strips. In addition there were the cotters, who served the lord only one day a week and whose holdings were so small that they required less attention than those of the freemen and villains. They were able, therefore, to hire themselves out. We can imagine that even the women and girls were glad to go into the fields to save the harvest while the head of the family was cutting the grain on the lord's demesne.

Method of farming the arable; three-field system. No one can be sure just why a man possessing thirty acres of land should have the ten acres in each field cut up into ten scattered strips. If we examine the system of farming then in vogue it is plain to be seen

why a third of the land must be in each of the three fields. According to this system, known as the three-field system, one field—the north field, let us say—was planted with wheat or rye or a mixture of the two one year, the east field with barley oats, etc., and the west field was allowed to lie fallow. When ground was allowed to lie fallow nothing was planted in it, but this does not mean that nothing grew there. On the contrary, all sorts of things sprang up from the seeds which had been carried onto the land by birds, animals, or the wind. These weeds, plowed into the soil before the next planting, restored to the earth some of



PLOWING ON THE MANOR

the elements which were most needed. The next year this field, which was in the best condition of the three, was planted with the most valu-

able crop, the wheat and rye. The north field, which had just yielded a wheat crop, was put down to barley, oats, beans, or peas. The east field was allowed to lie fallow. This rotation was kept up year after year, with only such slight variations as the putting of all wheat or all rye in the first field. Just what crop should be planted and when was determined by a council of the villagers, and, the decision once made, the whole field must be planted as the majority decided. No man could do as he liked with his own strips. After the crops were cut the cattle and sheep were allowed to graze on the stubble.

Hay. More valuable in the eyes of the medieval farmer than the arable land was the meadow. The meadow provided hay, without which the cattle could not be kept over the winter, for at that time people did not know that they could raise grass on any land by planting seed. Each landholder had a share in the meadow corresponding to the amount of land which he possessed. After the hay had been cut and dried and stored in the lofts of the owners, the animals were turned in here as they were into the fields.

Live stock. Cattle, sheep, swine, and chickens were raised on the manor. During the summer the animals were taken out by the village herdsman, shepherd, and swineherd to feed on the pastures which bordered the woods. Here they picked up a living which was scanty enough, judged by modern standards, but which was abundant compared to their winter fare. Even though the number of animals any man could keep was strictly limited in accordance with his holding, the tendency was to run beyond the number which the limited food supply would take care of. The hay and such fodder as the coarse peas and beans afforded were never sufficient to carry through the winter all the animals which the summer increases had given. In the autumn each farmer went through his flocks and herds to weed out those that were least worth saving. When the animals were slaughtered, part of the meat was eaten fresh or sold in the markets of the nearest town and the rest was salted down or smoked for future use. As cattle were bred to produce hides, and sheep were bred for their wool, and neither had much meat on their bony frames, the bulk of the meat put by for the winter was pork. .

Household industries. Besides salting pork and smoking hams and bacon, many other industries were carried on in each cottage as well as in the great house; in fact, nearly all the goods consumed were manufactured by the members of each household for their own use. Before mills were constructed the women ground the rye or wheat to flour between two stones and baked it in cakes in the fires which they built on the dirt floors of their huts. In time a village mill and a village oven came to lighten the women's burdens. Barley was made into beer by each family, and milk was turned into cheese and butter. The men tanned the hides of their cattle and cured the pigskins and sheepskins and made from them clothing, containers for liquid, harness, and many other useful things for which we have more suitable materials. Although the men's jerkins, hose, and work aprons were of leather, for the most part, the women wore clothing of woolen cloth or linen made from hemp. These textiles were woven on rude looms from yarn spun with a spindle not unlike that employed by

primitive woman, until the spinning wheel was invented toward the close of the period. From the timber cut in the woods the men fashioned stools, benches, and chests, bowls, platters, and spoons for table use, yokes for their oxen, wooden shovels and rakes and handles for scythes and other farm implements. From the osier willows which grew along the stream they made baskets for many uses.

Specialized industries. In the course of the thousand years which go to make up the Middle Ages many changes took place even among people as shut off from contact with the outside world as were the inhabitants of the manor. Of most of these changes we can only take cognizance when they reach such a point as to bring in a new set of economic relations. One change, however, should be noticed: it is the shifting in some branches of industry from the strictly household system to the specialized system. One craftsman had always served these rural communities. This was the blacksmith. As far back as we trace the use of metal we find that only one or two men in any community had the skill and equipment required for metal work. In the early Middle Ages the blacksmiths went about the country peddling their wares or stopping to mend broken blades or to patch kettles which had sprung a leak, and for some time they were the only craftsmen whom the country people knew. In England much earlier than in most countries another industry fell into the hands of specialists, and this was the grinding of grain to flour. The transfer of the milling from the home to the mill was due not so much to the skill which the miller had to offer as to the invention of a mill run by water power, which made it possible to grind grain with but a small fraction of the time and effort expended on the hand mill. In time other craftsmen differentiated from the village group. The miller and the smith were joined by a thatcher, who kept the thatched roofs of the little cottages in repair. One man devoted himself to building and the construction of the wooden tools and furniture which had hitherto been made by the men of each household. A village cobbler also made his appearance on most manors, to be followed in due course by a tanner, a fuller, and others. Bearing

in mind the rigid organization of the inhabitants of the manor, one may wonder where these workers came from. It seems probable that most of them were drawn from the cotter class, though some may have been the younger sons of the villains who would have no share in their father's land. Even when money was very little used on the manor these craftsmen seem to have been paid for their services in coin. If there was no money they were paid in food and clothing or whatever they needed that their would-be customers had to offer.

Tools and methods of work. Reference has been made to the clumsy wooden plows drawn by the slow-moving oxen and the wooden rakes and shovels which the farmer used. The craftsman was little better off in regard to his tools. Iron and steel were scarce and expensive, and so the craftsman was obliged to use wood wherever it could be made to answer the purpose. Methods of work were correspondingly crude. With a clumsy wooden plow the plowman could do little more than break up the surface of the ground. He could not plow deep. Grain was threshed with flails on a wooden floor which usually had a roof over it to shut out the frequent rains for which England is noted, and in this respect the English were somewhat in advance of the ancient Egyptians, but in many lines they showed no improvement over the people who first turned from a nomadic life to agriculture.

Summary. As we look at the picture of the medieval manor which we have built up bit by bit, its utter isolation and self-sufficiency strike us with renewed force. With isolation and ignorance went a conservatism which made all advance painfully slow. The successors of the Romans were planting fewer crops than the Romans had known. Of vegetables they had in early times practically none that were fit for human food; onions were used, but the coarse peas and beans were merely fodder for the cattle; by the fourteenth century cabbages, onions, parsnips, and carrots were planted in the little gardens attached to the homes, but these were all. Tools were poor, and methods of work clumsy and governed by superstition rather than by science. One great advantage and one only did the manor show over the villa of the Roman or the estate of the

Egyptian noble. On it the workers were given some responsibility for the results which their labor was intended to produce. In this lay the salvation of the race, for responsibility developed initiative, and in time saviors from the common people came to lead them out of the drudgery and hardships which were their portion.

Disposal of surplus of the manor. Although the inhabitants of the manor lived and died without coming into contact with their fellows outside of their lord's estate, a part of the goods which they produced often traveled far in search of a consumer. Let us imagine that the typical manor which we have been studying is one of a group of thirty owned by an earl who has several more such groups in different parts of England. On one of the manors in this group he has a castle of sufficient dignity to serve as his home for a part of each year. To this castle he comes in the autumn with his great household of servants, men at arms, and hangers-on. Here, then, must be brought the products of all the neighboring estates to feed and clothe this host. On each manor the bailiff collects the products of the demesne and the goods which the freemen and villains have paid in as dues, and travels up to render his account to his lord. No doubt most of what is brought in is used up by the lord and his retainers before they move on to another castle, but it may easily happen that in a fine sheep country the supply of wool may exceed the needs of the household. In such case the lord would see his opportunity to obtain some salt for preserving the meat of the animals which have just been killed, a piece of armor, and wine from over the sea. One of the bailiffs would be put in charge of the transaction. He would naturally look about for someone having for sale the commodities he wished to buy and offer them the wool in exchange. Such people were the merchants who went about the country with their packs very much as peddlers do now in some of the rural districts. They were most often met with at the crossroads.

Market place. Perhaps at the foot of the hill on which the castle stands there is such a meeting place, and all the inhabitants of the neighborhood have formed the habit of coming there on a certain day each week to exchange or sell any surplus goods which

they might have to the stonemasons, who are busy on a new wall and moat for the castle, and other specialized craftsmen in the employ of the lord. If so, the lord has perhaps put up scales in this market place, and charges for the use of them. In this market the bailiff succeeds in trading a small part of his wool for salt and armor, but no wines are offered, and no one will buy the rest of his wool. There is nothing left for him to do but hunt up a place where wine merchants from France are to be found with their wares and Flemish merchants are buying wool for the weavers of the Low Countries. Such a place would be one of the great fairs. Here the wool would at last find a purchaser and start on its journey to Flanders to be made into fine cloth.

Fairs. Fairs were gatherings of merchants held annually or semiannually under the regulation and protection of someone to whom the king had given a permit to hold a fair or who had from very ancient custom a claim to this privilege. The location chosen was usually a meadow or a grassy hillside near a seaport or a river port or an intersection of two or more roads. No doubt custom had made these places trading centers before the formal establishment of the fair by the king, but with his sanction came greater security for the merchant and his wares as well as countless regulations as to how business should be done.

Shortly before the time of the fair came round, the person to whom the fair was granted—the lord of the fair—had the fair grounds inclosed with a stockade and set up booths inside for the use of those who were willing to pay for them. Merchants who were not willing to hire a booth must display their goods on the ground as best they could.

Regulations of fairs. At the opening of the fair the number of days it was to last was announced, and heavy fines were ordered imposed on anyone who did business after the date fixed for closing. During the fair no one was allowed to buy and sell outside the fair itself within a radius of several miles of the grounds. Only the official weights and measures, which belonged to the lord and for which he charged a fee, were to be used. All disputes between merchants or breaches of the rules of the fair

were settled in a court established for the purpose, known as the court of piepoudre. In this court the lord's judges were assisted by a committee or jury of the merchants. As the laws regulating business dealings were very few, this court often had to decide the cases brought before it according to its sense of justice. From the decisions of these courts there grew up a body of customary law which is the foundation of the commercial law of England and the United States today. Most of these regulations were aimed to secure fair play among the merchants and to preserve to the lord the tolls and dues which were his reward for the trouble he had taken.

Classes frequenting fairs. Our bailiff who went to the fair to dispose of his wool and to purchase wine for his master's household was only one of a large class who did business there. With him were many other agents from the agricultural districts of England, offering for sale, in addition to wool, the grain, hides, and cheeses which formed the chief exports of the country. In the same category belong the other producers, such as the miners, who had tin, lead, or iron for sale, and craftsmen with articles of their own manufacture. As the work of the English craftsmen was long inferior to that of the workers of the Continent, none of their products were carried abroad, but were sold to those who distributed them through England. Most of the metal was also consumed at home because its weight made the transportation of it to any distance expensive. Besides the producers of native goods, there were two other important classes at the fair. They may be distinguished as the great merchants and the peddlers. To the first class belong men of capital, who bought and sold wholesale. They also frequently sold at retail in their home city or at the fairs. In the other cities which they visited they were allowed to do only a wholesale business. These men usually traveled in groups, those from the same city keeping together for greater safety. It was from one of these that the bailiff was able to procure the wine. The small merchants, or peddlers, were those who went about with packs on their backs from one castle or tiny village to another. At the fairs they laid in their stock of odds and ends. In addition

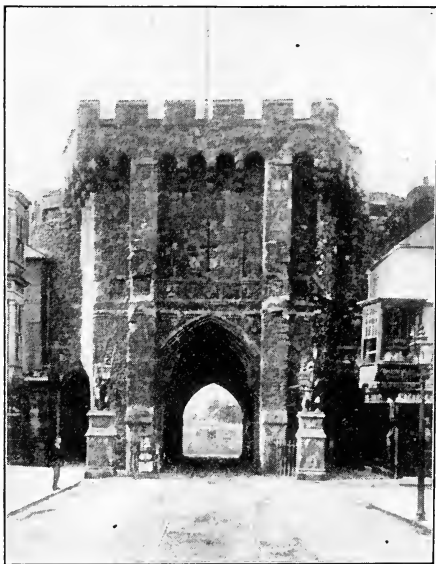
to these three groups of business men—the producers, the whole-sale merchants, and the retailers—there was another class, the consumers, who came with ready money to purchase goods for their own use. This class was small and relatively unimportant.

Methods of exchange. In early times most of the business done at the fairs was conducted on the system of barter. Our friend the bailiff would hunt up a French merchant with wine for sale and exchange his wool for wine. As the wine merchant could not use the wool directly, it was only valuable as an article of exchange. Even if there were a Flemish merchant on the ground who would take it at once, he could only afford to take it at a rate which would assure him of a profit on the second transaction. If there was no Flemish merchant there the merchant might have to carry it all the way to the fair at Bruges before he could realize on his investment. To relieve this situation, money soon came into use. Long before the villain had learned to sell his surplus for money and pay his dues with the coin received, transactions at fairs were largely conducted on a money basis. This simplified business very much and enabled the producer to obtain somewhat better prices for his goods. Even after the introduction of money foreign products continued to command a very high price because of the high cost of transportation and the enormous risk at which they were carried. Nothing but the hope of immense gains would induce a merchant to venture his life and his property on a trip to a distant market.

Social features of the fairs. As the fairs became widely known and largely attended, the amusements which had always formed a part of them became more varied and important. Level patches of ground were kept clear for dancing, and tents were provided for gambling. Along with the venders of goods calling their wares and poking fun at one another were showmen leading bears and other trained animals, actors, clowns, and musicians, each making his bid for the attention of the crowd.

Effect of fairs. Although fairs were primarily commercial and not industrial in character, they exercised a powerful influence on the industrial development of the period. Through the fairs the

productions of foreign craftsmen were distributed through England. Even if a craftsman was unable to purchase one of these objects to keep as a model, at least he might have a chance to see such things by attendance at a fair. In this way the fairs helped to disseminate the higher craftsmanship of the Continent among



A GATE IN THE OLD TOWN WALL,
SOUTHAMPTON, ENGLAND

the backward English workers. The second important effect of fairs on industry was this: by providing a market for surplus products the fairs encouraged farmers, miners, and craftsmen to produce goods in excess of their own needs or the requirements of their local market, and so certain industries were carried on on a larger scale.

Medieval town. By encouraging commerce, fairs helped the growth of towns. The medieval town was far more like the city state of the ancient Greeks than like

a town of the present day. It consisted of a small settlement surrounded by a wall, and the farming district lying about. The population, which often numbered no more than two to four thousand souls, was made up of merchants, craftsmen, unskilled laborers, and their families. In the early part of the period most people of consequence in the town owned land and did some farming. As manufacturing and commerce increased this was given up, and the townspeople depended upon supplies brought into the town market by the farmers from a distance. To a large extent the town was an

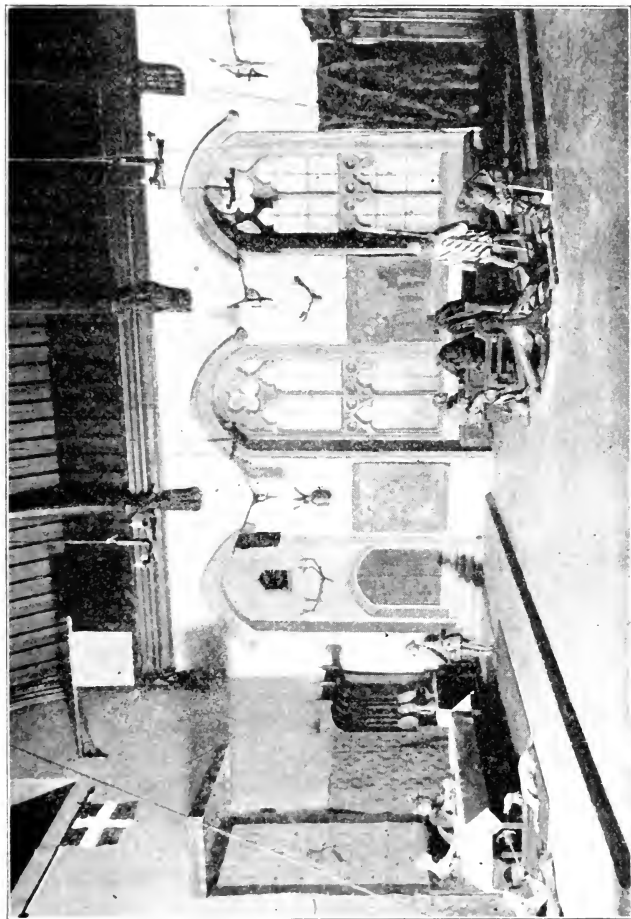
independent state and not an integral part of the nation within the boundaries of which it lay. It possessed large powers of self-government which, when once granted, king and noble were bound to respect. Economically the town was largely independent, although it owed its very existence to trade. At best only a small stream of foreign wares trickled into a town, while the greater part of its wants were supplied by local craftsmen, who produced entirely for the local market. Socially as well as politically and economically the town was independent of outside influences and yet closely knit within itself. Men lived in the same neighborhood where their forefathers had lived, carried on the same occupations, and intermarried into the same families. They looked to their own inventive powers for the shows which amused and instructed them and the dances and games which made gay their holiday.

Origin of towns. Let us turn for a moment from the town in its full development to the origins from which it sprang. It is impossible to say of English towns, as may be said of some of those on the Continent, that they are of Roman origin. As the Saxon conquest practically put an end to commerce, the cities which had grown up under Roman rule were deserted and fell into ruins.

When towns begin to appear again in historical records they seem to owe their existence to one of two causes: they were either expanded households, like the royal cities of ancient Egypt, or they were natural trading centers. Very frequently they were both. Winchester is an excellent example of the first class. Here the West Saxon king had his royal residence for a part of each year. About him there gathered, in addition to his family and servants (who shared the palace with him), state officials, clergymen (who acted as secretaries, as they were the only people who knew how to write), soldiers, and craftsmen of various sorts. These craftsmen were sometimes brought from great distances because of skill in an art which served the king. Tapestry-makers were often brought from places hundreds of miles away in a foreign country to make a set of tapestries for royal hall or church. To such a place traveling merchants found it well worth their while to go to offer their goods to a king, who was one of the few people who had

surplus wealth enough to buy of them. Although the king and his immediate court were fed principally by the produce which was brought in from the royal manors in the neighborhood, some of the craftsmen must have been obliged to obtain their food by purchase or barter from such near-by farmers as had a surplus. It would not take long for such conditions to produce a market. With a market the steady growth of a town follows in due course. How the townspeople bought from the king the right to collect their own taxes, to try cases arising between their own people, and to make their own laws is a long story. Suffice it to say that such rights were granted sooner or later to most towns by the bestowal of a document known as a charter, always in return for a handsome sum of money paid by the townspeople to the king.

The other class of towns, those which grew from trading centers, is well represented by London. In Roman days London was an important center, and most of the Roman roads radiated from that point. When the Roman city had entirely disappeared the roads continued to be the only highways of England. At the point where they met, the Thames was navigable for the ocean craft of the period, and at the same time this spot was far enough removed from the sea to be fairly secure from the raids of pirates. What was more natural than that with reviving trade merchants should take to landing goods here and making of this a general meeting place? Shelters for them and their goods, homes for the workmen who helped them load and unload their merchandise, a market for foodstuffs, all appeared. Some traders found it profitable to take up a permanent residence and cater to the needs of the traveling merchants. When their number became sufficiently great they and the prominent men of the locality drew together into a municipal organization and began to negotiate with the king and such lords as claimed authority over the land on which their homes and shops were built for the right to manage their own affairs. It often took a hundred years or more of bargaining before all the rights which a town could hope for itself were won. The town then became a little state within the state and for several centuries worked out its own salvation in great independence.



MODEL OF PENSURST HALL, MEDIEVAL ENGLISH INTERIOR

Note the use of tapestry, the Gothic sideboard and windows, and the fire in the middle of the hall

Merchant Guild. While all the population of standing—land-owners, merchants, and skilled craftsmen—were building up a municipal government the merchants were drawing together into an organization of a somewhat different character. This organization was called the Merchant Guild.

Purposes of the Merchant Guild. Originally the Merchant Guild was a society of merchants aimed at mutual helpfulness and protection. Especially when the merchants of a town took their goods to a fair or another town they would need the help of each other against the dangers which they would meet on the road. With a weak central government robbers and highwaymen did a good business outside town walls. Even nobles and the king himself were not above robbing merchants under pretext of law. To protect themselves from these dangers the merchants traveled in groups, armed. When a man entered the guild he swore to assist any of his fellow guildsmen who might be injured on the road or falsely brought to court in a foreign city. If a member of the guild died poor the guild buried him and extended help to his family. As the guild grew and prospered it reached out for still more power. The home town was becoming the scene of more extensive trading, and the guild aimed to monopolize this business as far as possible. To accomplish this the members secured from the king the right to regulate all business done in the town. This privilege was often granted to them in the town charter. It then became the policy of the guild to make admission to their membership as difficult as possible, so that each one of the guildsmen might have more business. As many of the merchants were also makers of goods, the merchant guilds broke up as the craft guilds rose in importance, and there is no way of knowing where their monopolistic tendencies would have led if they had been allowed to pursue their way unhampered.

Craft guilds. The craft guilds were organizations of the craftsmen of each trade for mutual helpfulness and the advancement of the mystery or trade in which they were engaged. In their early stages, at least, they rendered important services to the public as well as to their own members. No member was admitted until he

could prove himself a competent workman, and a member who failed to do honest work was punished and eventually expelled. The customer who gave an order to a guild member was guaranteed honest and efficient workmanship. In order to understand the guild of the craftsmen it is necessary to keep in mind the conditions under which medieval industry was carried on.

Craftsman's shop. Let us take, for example, the cordwainer's shop, where fine shoes are made. The master with his workmen and apprentices, numbering in all from three to ten persons, would be busily cutting and sewing shoes in the rooms on the ground floor of the combined shop and dwelling house of the master. In one of these rooms, facing the street, a large wooden shutter has been let down to form a shelf, and on it are exposed for sale a few pairs of shoes.



A SHOEMAKER'S SHOP IN THE LATER
MIDDLE AGES

Note the window onto the street, where a sale is going on

These serve chiefly as samples, for shoes are made to order from measurements except in emergencies. Customers come and go in the shop. The master, moving about among his assistants, directs their operations. When evening comes the workmen put up the shutters and set the shop in order before they climb the stairs to the floor above, where the living rooms of the family are. There a table is spread for the evening meal, and family and workers take their places at the table together. At night they go to their sleeping rooms in the attic. Day and night they are under the

eye of the master, who is responsible for their conduct to the city authorities and for their training to the guild.

A shop of this kind differed greatly from a modern factory. It required but a small capital to start. Enough money to rent a house, buy a few tools and a few hides, was all that a cordwainer needed to set up as a combined manufacturer and shoe-store keeper. The contact between customer and manufacturer encouraged the careful workmanship which is as characteristic of the medieval arts and crafts as of the Greek work of the same class. To the man of artistic feeling his craft offered opportunities for self-expression such as only the designer can enjoy in the modern industrial system.

Membership in guilds. Craftsmen of the same craft naturally lived close together and worshiped at the same church or chapel. It was natural that they should help each other in emergencies. Out of this spirit of neighborliness a loose and then a closer organization seems to have sprung. This organization was finally completed when the craftsmen asked the municipal government (if it were well established, or, if not, the king or feudal lord of the district) for permission to form a craft guild and enforce their regulations in the city courts. Each craft guild included all the workers of that craft in the town. The members of each guild were divided into three classes, and only the highest in rank had full privileges in the management of guild affairs—the right to hold office and assist in forming the regulations which the guild drew up. The highest class of members were the masters, who had been given this title either upon the presentation of some excellent piece of work or after an apprenticeship of several years to a master worker, who vouched for their skill. The master workers, or freemen of the guild, owned their own shops, and under them worked the other two classes of craftsmen—the journeymen and apprentices. The journeymen were trained workmen who had passed through their apprenticeship and were ready to set up for themselves, but could not start in business until they had accumulated a little capital. They were occasionally allowed to vote, though they could not hold office in the guild. The apprentices

were half-grown boys who were apprenticed to a master to be taught the trade; they were usually required by their papers of indentures or by the guild rules, or both, to serve the master for seven years. During that time the master must thoroughly instruct them in the mystery of the craft, furnish them with food, shelter, and clothes, and, frequently, give them a few pennies for spending money each year. A yearly inspection of all apprentices was made by the officers of the guild to see that the young men were being properly taught and well treated by their masters. The apprentices were never allowed to vote in guild assemblies, although they were bound by the rules of the guild.

Government of the guild. All important guild business was attended to in assemblies of the guild members, in which the masters took the leading part. Regulations were drawn up to be submitted to the mayor and aldermen of the city for their approval, and officers were elected. The most important officers of the guild were the wardens, bailiffs, or overseers, as they were variously called. It was the duty of these men to inspect the shops of the city and to see that the approved regulations of the guild were carried out. If a craftsman was caught in wrongdoing he was taken before the city court for punishment.

Guild regulations. All guilds made rules to govern the size and quality of the goods which their members made, and strictly enforced these rules with fines and, upon repeated offense, with expulsion from the guild. Night work was forbidden, as it was likely to be poor work on account of the uncertain candlelight or rushlight, which was the best illumination that the age afforded. No work was allowed on holidays or Sundays, and in time a Saturday half-holiday was insisted upon. No master could employ any women in his shop except his wife and daughters. Some of these provisions were intended to prevent competition among the guildsmen. The rule that no one who was not a member of the guild should ply his trade in the city aimed to stop all competition from outside. Besides these purely business activities the guild performed other functions of a fraternal nature. Help was given to needy guild brothers who were unable to work because of old age

or infirmities, funeral expenses of members were paid, and widows of members were pensioned. If a member had undertaken a contract and was unable to finish it on time, he could call on other masters to help him out. Guilds frequently endowed a chapel or chantry, where masses were said for the souls of the guildsmen. The guild was not only the craftsman's trade union and insurance company, it was also his club. The feasts and annual pageants which the guilds gave were among the social features which marked guild life.

Purposes of the craft guilds. The purposes of the craft guilds were, first, to obtain a monopoly of the industry of a city for their members. By virtue of this monopoly they were able to regulate prices, quality of output, and hours of labor. Secondly, they aimed to prevent competition among their own members which would upset prices and so subvert the whole system which they had built up. Thirdly, they attempted to maintain a high standard of workmanship in order to create and retain a good market for their products. To understand the importance of this we must remember that different towns frequently manufactured different types of goods which were known by the name of the town where they were made. For instance, Kendal cloth was a particular kind of coarse cloth made in Kendal; worsted, a term still in use for a large class of materials, originated in the village of Worsted; and so on. Goods originating in one place were copied in others, and then they took the names of the two, as "London worsted." Under such conditions it would be a serious calamity to the merchants of Kendal, when they went to the nearest fair to sell their cloth, to find that some dishonest weaver had sold an inferior grade of cloth the year before and now no one wanted their wares if he could get any other cloth that would answer his purpose.

Effects of the craft guilds. The craft guilds did much to encourage industry by creating conditions under which the trades became attractive to men of ability. By the long-term apprentice system they made it profitable for masters to train thoroughly the young men who wished to follow their calling. They raised the quality of English goods until in the fifteenth century they

could compete with foreign manufactures. They also did much in their double capacity of manufacturers and retailers to develop a high standard of honesty. That a sense of honor in business dealings was sadly lacking at the outset is evident from the frequent fines imposed upon guild members. Tanners were called to account for putting a few poor hides in packets supposed to contain only high-grade hides, cloth-makers for attaching a poor piece of cloth to a good one and selling it by the good end, dyers for using a cheap and injurious dye in place of the dye prescribed by the guild regulations. Without a high standard of honor there cannot be the confidence among business men upon which the credit system rests which makes extensive and rapid business dealings possible. The industrial and commercial expansion which lifted England to a foremost place among the nations of the world would have been impossible without the moral development which the guilds fostered. The evil effects of the guilds are not so evident as their good effects until the fifteenth and sixteenth centuries, when we shall meet them again.

Relation of guilds to municipal government. If each guild had been able to advance its own interests unchecked, the evils from which we have suffered at the hands of the worst of the trusts would be mild in comparison to the misery these guilds might have caused. On the contrary, the rights of the public were jealously guarded by the town government. If the bakers ran up the price of bread the town council investigated the cost of production and fixed a maximum price at which each size of loaf should be sold. At the same time the authorities were equally ready to protect the bakers from unfair competition. This sounds very ideal but it might not work so well today. Such minute regulation of business was possible then because each town was largely isolated in its economic relations, and through the whole period towns were very small, a very few of them containing within their walls twelve thousand people, and many of them less than five thousand. At the end of the period London, by far the largest city in England, had a population of only a little over forty thousand souls.

Products of the medieval craftsmen. If we turn to the products of the English craftsmen we find that they differed in several respects from our own manufactured articles. In the first place fewer types of goods were made. No china, glass, silk, cotton, or bricks were manufactured in England until just at the close of the Middle Ages. Woolen goods were much more limited in variety than now. Such raw materials as Indian corn, tobacco, cocoa, rubber, and aluminium, to mention only a few, were unknown until after the discovery of America or even later, and consequently all the industries at present connected with them did not then exist. Many other classes of goods now made in factories were then made at home. Of the industries which did flourish in the hands of craftsmen we should suppose that of the metal workers to have been the most prominent, to judge by the great number of people who assumed "Smith" as a family name. As war was the order of the day, the chief duty of these many smiths was to manufacture weapons and armor. Of quite secondary importance was the production of iron and steel tools for the use of the craftsmen, or copper pots and kettles for the kitchen. The jewelry and tableware of silver and gold, sometimes set with precious stones, which the goldsmiths and silversmiths of England made were famous even on the Continent. Although the fine woolen cloth worn by the wealthy classes was imported, an ever-increasing quantity of the coarser grades was woven, dyed, and dressed in England. Tapestry of a high grade was also made from wool, but this was largely the work of gentlewomen in their own households. From flax some linen cloth was made, but this did not compare with the imported goods. For her laces and embroideries England achieved a reputation. When building in stone was first extensively introduced in the eleventh and twelfth centuries, the stonemasons and stone carvers were brought to England from the Continent, but the native workmen soon developed considerable skill in this work. Wood-carving and cabinetwork also reached considerable importance at times in the country. One branch of industry which was quite as important then as now was the leather industry. From very early times the English had understood how to tan leather,

and this material was formed into a vast number of articles. Gloves, shoes, and saddlery were made for the wealthy, and garments of various kinds for those in humble circumstances.



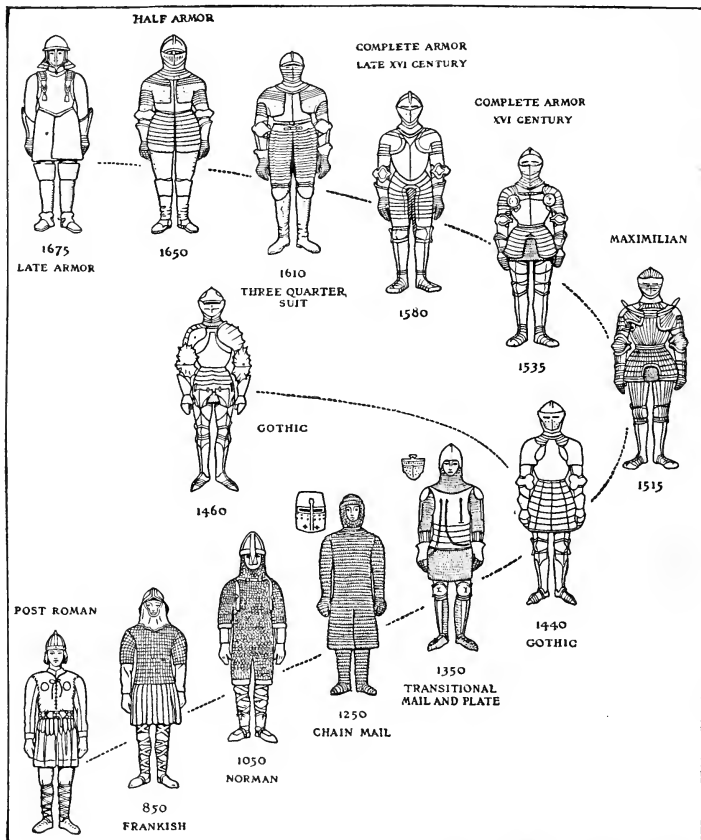
Courtesy of Metropolitan Museum of Art

OAK CABINET. (ENGLISH, FIFTEENTH CENTURY)

Note the heaviness and simplicity as compared to later English furniture

In the second place, the quantity of manufactured goods in England was very much less in proportion to the population than it is now. For instance, only the nobles or wealthy merchants had any household furniture which was made by craftsmen. Such a thing as a bed was only for princes and great lords. Poor people

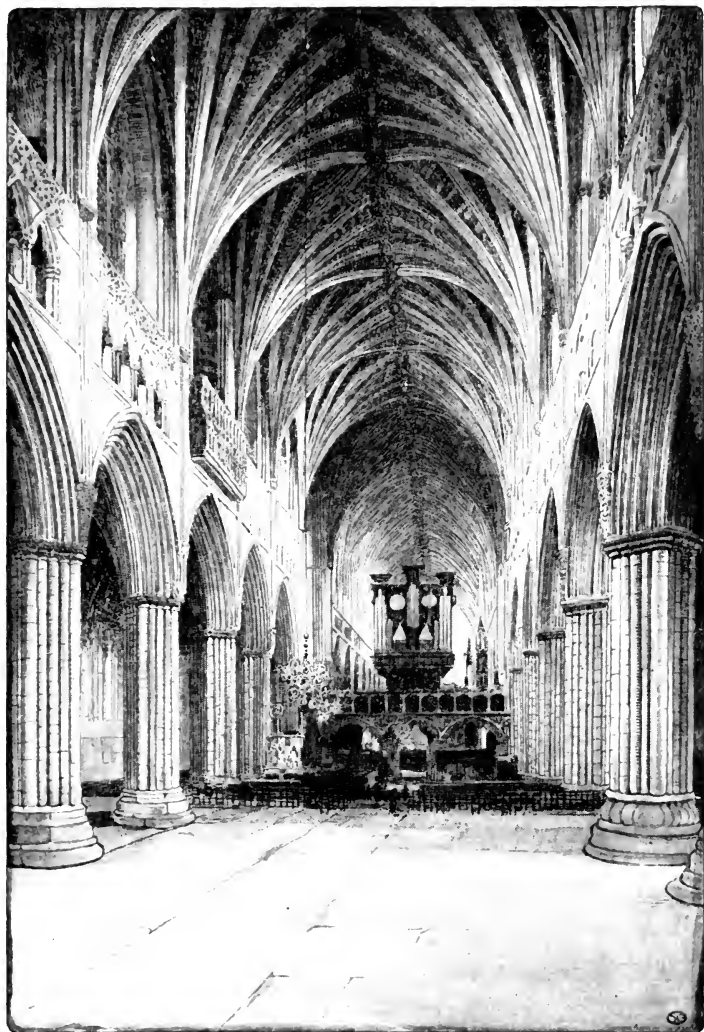
slept on a pile of straw on the floor. Needles—which we buy by the package and lose and break without the slightest concern, no matter how poor we are—the people of that time regarded as



Courtesy of Metropolitan Museum of Art

DEVELOPMENT OF ARMOR IN A THOUSAND YEARS (A.D. 650 TO 1650)

treasures to be carefully guarded; the possession of a single steel needle was looked upon as a cause for self-congratulation. One copper kettle was all that a family in moderate circumstances could hope to own. How much the greater abundance of all these



INTERIOR OF EXETER CATHEDRAL, SHOWING THE SKILL OF THE
STONE CARVER AND THE BUILDER

things, and many more which might be mentioned, has added to the comfort of human beings it is not difficult to see.

The reason for the scarcity of manufactured goods is not far to seek. With but the simplest tools and no knowledge of science which would enable him to call to his assistance the forces of nature, the craftsman could produce his wares only at the expenditure of a great amount of time and muscle. For instance, in the production of armor the ore must first be melted in a charcoal fire, which was kept up to the required temperature by the blowing of a hand bellows. Even at that the iron did not reach a liquid state. It settled down into a soft lump at the bottom of the fire, from which it must be taken and hammered by hand to press out the many impurities which it still contained. It was then beaten out into sheets, cut into shapes for the various plates for plate armor, and hammered while almost cold into the curved, fluted, or ridged surfaces which were required. All this took days of hard labor by a skilled worker, and such a man expected a comfortable living in return for his labor and set the price of his goods at a corresponding figure.

In spite of all the difficulties against which these craftsmen had to struggle, the wares which they produced compare favorably in workmanship and design with similar articles produced today. Carved-stone columns, roofs, doorways, and monuments scattered all over England tell the story of painstaking effort and love of the work. They are beautiful in proportion and are decorated with exquisite carving. The work of the silversmiths and goldsmiths shows the same sense of the artistic in the shapes and designs which they worked out in drinking-cup and mixing-bowl. In the great tapestries we find the story told again. The pictures which these tapestries represent are well drawn, the colors used are harmonious, and, at the same time, the actual weaving, which has required years of labor, is even and beautiful. It is evident that the medieval craftsman was both an artist and a careful workman. The growth of towns in power and importance, the rise of the craft guilds, and the development of the crafts were all much influenced by the growth of the commerce of the country.

Commerce in medieval England. *Effects of the Saxon, Danish, and Norman conquests on commerce.* From the time that the Romans conquered Britain until they left the province in 410 England shared with the other provinces of the Empire in the extensive commerce which Rome made possible. The Saxon conquest in the fifth century practically put an end to commerce for a time. The Saxon settlements were so hostile toward one another that it was not safe for traders of one to go to another. What little exchange of goods went on was arranged in the neutral zones, at boundaries, or in sacred inclosures such as churchyards. Metals and salt were necessities to the Saxons in the manner of life to which they were accustomed, and these things had to be obtained by commerce, as they were not found in all parts of the country. Such articles as these were bartered in the churchyards when people were gathered there to celebrate some religious festival. On the whole, commerce grew very slowly, for the Saxon farming communities—like the manors, into which these communities later developed—supplied almost all of their own needs.

When the Danes conquered England in the tenth century they gave an impetus to trade, as they were expert shipbuilders and seamen. With the Norman conquest in the next century commerce was still further stimulated. The Normans came from a province in northern France, and they had already formed trade connections with the other countries of the Continent, such as the Low Countries (now Holland and Belgium), France, Italy, and the Rhine lands of Germany. When they came to England this trade was continued and increased by the industrial differences between England and the Continent. On the Continent more of the technical skill of the Romans had survived the overthrow of the Empire than in England. In consequence industry was further advanced there, products were finer, and more manufacturing was left to experts and less was done in the homes of the people. On the other hand, England produced the finest of wool, hides in abundance, tin, and lead—all materials in demand abroad. Such conditions would naturally make for a trade in which England would export raw materials and import manufactured goods,

just as she had when she was a Roman province. This trade was much encouraged by the presence in England of great numbers of Normans, nobles and churchmen, who had followed William to England. These gentlemen had received most of the estates of the conquered Saxon and Danish nobles and were in a position to pay well to gratify their desire for the fine clothes, well-made armor, and other luxuries which were to be had in their native land. Their own merchants opened up the foreign trade, and all during the Middle Ages foreign goods were brought to England and English goods taken to the Continent by foreign merchants and not by Englishmen.

The first organized group of foreign merchants to take up the business was the London Hanse, an association of the merchants of the towns of northern France. The English kings gave them special trading privileges, and they erected warehouses and offices in London. The Hanseatic League, an organization of some German cities, soon pushed all other foreign traders to the wall and for many years, under royal favor, monopolized the foreign trade of England.

National finance in medieval England. To hand over the commerce of the country to foreigners seems a most unpatriotic thing for any king to do, but if one looks into the condition of the king's finances it is easy to see why he did it. The medieval state was not on a money basis. In England the king had a right to a small tax on all the land in the kingdom which was supposed to be paid in money, but the principal part of his revenue was derived from his own estates, which consisted of thousands of manors. The income of these manors came to him in the form of grain, wool, hides, and meat. Such things could be converted into food and clothing for the court, but they could not be turned into money. If the king wished to hire a secretary who was not willing to take his pay in food and clothing, he was obliged to give him land, as William had the nobles who, with their retainers, helped him to conquer England. Unfortunately, people who received land always expected to keep it all their lives and then to hand it on to their children. Theoretically the son was supposed to serve

the king or the king's son, as his father did, but in practice this did not work very well. The secretary's son might not make an efficient secretary, or, more likely still, he would feel that the land was really his and be very indifferent about what he owed the king. If the king was strong enough to make his vassal afraid of losing his land if he did not do the king's work, things would go better. The king could hardly be strong enough for that without a large and loyal army. With little or no money an army was hard to get—that is, any army except that composed of the lords and their retainers. Sometimes these lords would come when called to help the king fight one of their number, but they were quite as likely to take sides against their royal master. Under such conditions as this it is not strange that it took the payment of a round sum of money to make the king part with his right to hold markets and collect tolls on the transactions which took place in them, hold courts, and collect the fees in the growing towns. Foreign trade opened the way to still larger money revenue. German merchants came from a country where silver was mined, and they were ready to pay the king well in silver coin for the privileges which he bestowed on them, as well as to import much silver into England to pay for the wool and hides which they bought. Under such conditions the king easily persuaded himself that the arrangement which was so advantageous to him was also beneficial to the country as a whole.

The Crusades. Two events which occurred during the Middle Ages had considerable effect on the industry and commerce of England. These were the Crusades and the Black Death. The Crusades were a number of expeditions, the first of them undertaken in the eleventh century by the warriors of western Europe, to free the Holy Land from the Mohammedans. We should pass over them, as we have over many other wars in which this class were engaged, if they did not have a commercial aspect as well as a religious and military one. In the first place, the Crusades brought together men from all parts of Europe. These men traveled through countries hitherto unknown to them except by the merest hearsay, and came in contact with the remains of Roman

and Greek civilization as they were preserved at Constantinople, and with the products and industries of the near East as they continued to exist under Mohammedan sway.

Effect of the Crusades on commerce. The effect of the Crusades on commerce was to increase exchanges to a great degree. Routes to the East were made familiar and more safe than they had been before. Eastern goods became familiar to the very class—the nobles—who had the means to gratify a desire for them. In this sense the Crusades served as an advertising campaign of which the merchants were ready to take advantage. Pepper and other spices, silks, precious stones, new varieties of woolen cloth and linen (such as damask, which still bears the name of the city which produced it), were among the Eastern goods which came to be much desired by the wealthy.

Effect on industry. Through the increase in commerce the Crusades greatly affected industry. Silks bought by the English noble were paid for in wool from his manors. This meant a wider market for wool and consequently encouraged its production in greater quantities than ever before. What was true of wool was true of other products. Furthermore, manufactured articles from the East were imitated in England by craftsmen, who thereby advanced their industry.

Effect on natural economy. The Crusades had considerable effect upon the money question. Nobles who had run their households without using more than a few pounds of money in the course of the year were suddenly confronted with the need for a large sum to go on a Crusade. In their need they turned to the Jews, who were the only money lenders of the time, and to the burghers of towns upon their estates. From the Jews they could borrow, but to the burghers they must sell something if they were to get any money from them.

The one thing which the burghers were most anxious to buy and the nobles most willing to sell were the feudal privileges which the noble enjoyed in the town. These rights he now gave up in part or in whole in return for a sum of money which was quickly expended in (to him) a profitless enterprise. This transaction

was repeated many times, with the result that in the end the nobility was both politically and economically weaker, and the townspeople stronger, as a result of the Crusades.

The Black Death. The Black Death, also known as the Great Plague, was a disease which attacked the people of England as well as other European countries in 1348 and several subsequent years. From one third to one half of all the people in England died of this terrible disease. In some places practically the whole population perished. When the scourge had passed a great change had taken place in the proportion between the amount of land and the number of laborers in the country. There were just as many fields to plow and reap, and only half as many villains and cotters to plow and reap them. In the same way the capital of fishermen, of miners, of merchants, and of craftsmen remained unimpaired, while the number of workers was reduced almost one half. The young fisherman who came into possession of his father's and his uncle's boats and nets would look about for a helper so that he might use the whole equipment to advantage. Immediately those laborers who had no capital of their own found themselves in great demand and asked higher wages than they had ever received before. The fisherman had the choice of paying higher wages or allowing half of his equipment to rot for want of use. He did what capitalists have been doing ever since—paid the higher wages and raised the price of fish. In general, then, this was the effect of the Black Death: the prices of labor rose fifty per cent, and goods, in the production of which the cost of labor was an important element, rose also. Food alone remained at nearly the same price as before the plague. With wages increased and the cost of the necessities of life but little higher, the laborer was better off than he had been.

Effect of the Black Death on the manor system. To understand the effect of the Black Death on the manor system we must take note of the changes which had been going on slowly for centuries in the relations of the lord to the inhabitants of his estates. The slave class had disappeared into the ranks of the small landholders. At the same time the freemen had been depressed to the ranks of

villains. As money came into more general use the villains had been able to sell their produce in the markets for money and to offer the lord money instead of service and gifts in return for the use of their little farms. This suited the lord better, as he was able to hire cotters and other landless men to work for him, and this hired labor was much more satisfactory than villain labor. The commutation of service into money payments opened the way for purchase of further freedom by the peasant. The right to buy and sell freely and to leave the manor when he wished were all to be had for a price. The villain was becoming a freeman by the waving of the golden wand.

The Black Death reduced the working population of the manor so greatly that the lord found many of the holdings without villains to work them and pay him the dues for them at the very time that all the landless laborers were asking much higher wages than ever before. He tried to revive the services, instead of payments, from the villains who remained, and at the same time he appealed to Parliament to force the laborers to work for the old wages. Parliament, in response, passed the Statute of Laborers, which required that all laborers should work for the wages which were customary before the plague. This was very difficult to enforce, because all the economic conditions of the time were against it. The lords became discouraged with the situation, gave up trying to farm their demesne lands, and rented them out. The villains who were able to do so were allowed, on the payment of the additional dues, to take the holdings of those who had died. Men who had small or unprofitable holdings ran away from them and became farm laborers at the increased wages or took refuge where the high wages and greater freedom were very tempting. The result of all this was the appearance of the yeoman class—free farmers occupying good-sized farms on lease—and a great increase of the landless laborer class. This change did not come about suddenly—in fact, it was the work of a century or more—and it did not take place in all parts of England equally. In the meantime a revolt of the working class occurred which, in spite of its apparent failure, did something to hasten these changes.

The Peasants' Revolt. In 1381 the peasants rose against the lords and went up to London to ask the king to redress their wrongs. The immediate cause of the revolt was the levying and collecting of a heavy poll tax by the government. This was only the spark which set the powder off. The attempts of the lords to exact the humiliating feudal obligations from the villains after these had been commuted into money payments aroused intense resentment among the peasants, which they expressed by attacks on the manor houses and the burning of the manor rolls, in which the record of their services was written. The legislation of Parliament, to keep down wages and otherwise to assist the landowners in their struggle against the working class, was in a somewhat lesser degree an object of attack.

Demands of the peasants. For the first time in English history the peasants throughout the country rose against their lords and marched up to London to ask the boy king, Richard II, for a charter of liberty that would make them all freemen. To get rid of them the king granted them all they asked, had their leaders slain treacherously, and then recalled his grant.

Effect of the Peasants' Revolt. Apparently the revolt had failed completely. As a matter of fact, however, what had been denied to the villain population of England as a whole came to them one by one and two by two.

Characteristics of the economic life in England in the Middle Ages. The most striking characteristic of the industry and commerce was the entire lack of rapid change. Generation after generation men worked as their fathers had worked, with no thought that progress was either possible or desirable. Progress there was, to be sure, but changes are discernible in the early part of the period only when we compare one century with another. To the twentieth-century man or woman who, in looking back over the last century of economic history, sees industry and commerce entirely revolutionized in one hundred years, this seems incomprehensible.

Lack of progress. This stability was due in part to the fact that down to the very end of the period a large part of the population

of England lived in isolated farming communities. Imagine a farming village of today with no railroads, no mails, no newspapers, no books (except a prayer book in the hands of the priest), no school, and a population who lived and died in that village with no more knowledge of the outside world than would be obtained by an occasional visit to the nearest market town or, once in a lifetime, a trip to a fair. Even towns were staid, small, and unprogressive, judged by modern standards, and yet they were far more progressive than the villages and farming districts.

Natural economy, no currency. The second marked characteristic is the peculiar economic system which was evolved to meet the needs of a society which was without money. When we say "without money" we mean without sufficient money to make it possible to carry on business on a money basis. This system is called the system of natural economy. In it barter takes the place of buying and selling in the exchange of goods, taxes are paid in kind, and laborers, soldiers, and even state officials are hired by giving them the use of land. Such a system makes for stability in all economic relations, and this stability made possible the numerous regulations of the municipalities and guilds as to hours of work, wages, methods, and prices. In our rapidly changing economic system such regulations would become intolerably burdensome to one side or the other almost as soon as they were made. Under a natural economy capital assumes a rigidity which militates against progress. When a man's wealth consisted of land or cattle or goods it was a difficult matter for him to go out of one line of business to enter another, no matter how great the inducements might be. The accumulation of capital was difficult, under such conditions, and this encouraged the tendency to produce enough for household needs and no more. The idea of getting rich was no part of the Englishman's philosophy. The amount of currency gradually increased until business and government worked over onto a money basis. This change was slowly taking place during the Middle Ages, although it was not complete until well into the mercantile period.

Limited commerce. The third marked characteristic of the Middle Ages in England was the very limited commerce which was carried on. This was due to disorder at first, later to poor roads, clumsy carts, lack of advertising, and want of capital to undertake any large venture.

Small-scale production. Closely connected was a fourth characteristic of the Middle Ages, small-scale production. No craftsman could consider setting up a large shop and manufacturing in quantity until commerce had opened up a larger market than his immediate vicinity offered him. The lack of capital and the poor means of transporting raw materials to his shop and the finished goods away, in addition to the guild rules as to the number of apprentices and journeymen one master might employ, all served to keep each industry in the hands of a group of masters, each working in his own little shop with three or four assistants about him.

Group activity. A fifth characteristic of the period was the marked tendency to group activity. The farming population was grouped on manors, the manufacturing and trading sections of the people into craft and merchant guilds. The individual, on the one hand, had little or no freedom of action, but the group showed considerable initiative. If we compare the activities of the craft guilds in bettering the conditions of their members and the craft with the lack of activity in their Roman and Greek predecessors to improve their economic conditions we shall appreciate the advance that had been made by the industrial workers. The appearance of a middle class, composed of manufacturers as well as traders, also marks an advance over Roman economic conditions.

TOPICS FOR DISCUSSION

1. Why should the Middle Ages sometimes be called the Dark Ages?
2. Compare the Teutons, who invaded the Empire, with the American Indians in regard to industry and commerce.
3. Why did not the Teuton invaders adopt and improve the industries of the Romans?

4. Imagine yourself a miller on an English manor. What would you see and hear about you? How would you spend your time?
5. Imagine yourself spending a day in a medieval town or at a fair. What would you see?
6. Compare a merchant guild with a chamber of commerce, with a corporation such as the United States Steel Company, and with a manufacturers' association. Which does it most closely resemble?
7. Compare a craft guild with a trade union and a merchants' association. Which does it most resemble?
8. Make a list of the government regulations (city and national) put upon medieval industry and commerce and compare it with a similar list of government regulations in effect during the World War. At which period was there closer regulation?
9. Was a craftsman better off in medieval England or in ancient Rome? Was a slave better off?
10. What is natural economy? Where has it existed? Why did it exist in the early Middle Ages?

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CHAPTER VIII

EUROPE IN THE MIDDLE AGES; COMMERCE; ITALY, GERMANY, FRANCE, AND THE LOW COUNTRIES COMPARED WITH ENGLAND

Commerce. In turning from the industrial development of medieval England to that of the countries of continental Europe one fact immediately confronts us. While commerce played a comparatively insignificant part in England, on the Continent it exercised a great influence on industry. This influence is so great that it is impossible to understand the history of industry in those countries without some knowledge of the articles traded, the sources from which they came, and the routes over which they were carried to the ultimate consumers.

Impediments to commerce. With the fall of the Roman Empire commerce dwindled on the Continent to very small proportions, although it never sank so low as in England. When better order prevailed and trade began to pick up, there were still innumerable impediments to prevent its rapid growth. Roads had fallen out of repair and bridges were destroyed. There were no wagons except clumsy oxcarts, so goods had to be carried on the backs of horses. The foreign merchant was everywhere regarded with deep suspicion and distrust, and attacks upon him were winked at by those in authority. On the sea he and his wares were likely to fall prey to pirates and on the land to highwaymen. To meet these dangers merchants formed the merchants guilds, and cities banded together in leagues and gathered armies and navies to protect their citizens.

Goods traded. Compared with the imports and exports handled at a modern seaport, the list of goods that entered into medieval commerce is meager indeed. First of all, there were salt and iron,

which were found in a few localities but were needed everywhere. Cattle, horses, and slaves, all of which could walk to market, were traded more or less extensively. Spices—pepper, cloves, cinnamon, nutmeg, mace, and ginger—and sugar were imported from the East. Precious stones were brought to western Europe from the same source, along with raw silk and cotton, dyestuffs, textiles (both woolen and silk), and fine china and glass. In return Europe sent wool, hides, gold, silver, tin, and foodstuffs to the East.

Cost of transportation and insurance. All these Eastern products were enormously expensive by the time they reached the consumer, not because of the original cost but on account of the heavy charges for transportation and protection in transit. A merchant who lost one ship out of a fleet of three to pirates added the cost of that ship and cargo to the selling price of the goods that remained, while he who hired enough fighting men to protect his wares added their wages to the price of his goods. Either way transportation and insurance came high, and the man who ate the pepper paid the bill. When foreign goods brought such high prices, it is not surprising that there was a very limited number of people who could afford to buy them. For this reason, as well as many others, commerce grew very slowly.

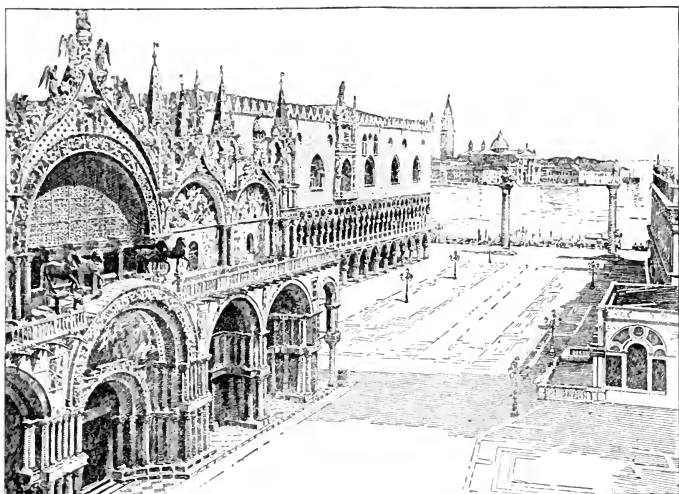
Trade routes. Some of the Eastern goods came from China, some from India and the islands south, and some from the lands bordering the eastern Mediterranean and the Caspian Seas, Egypt, Syria, the Greek empire, and Persia. From the first two were brought only things of great value, in proportion to their bulk, such as raw silk (in a time of scarcity), spices, and gems. Much of the raw silk was raised about the Caspian Sea. Fine textiles, china, and glass were exported from Egypt and Syria. There were three main trade routes over which these goods traveled west. One followed the pathway trod by Babylonian traders in the earliest ages of recorded history. From the coast towns of India uncertain little boats crept along the shore to the head of the Persian Gulf. From this point a road ran up the Tigris-Euphrates valley to Bagdad, one of the most important Eastern trading

centers; afterwards, dividing into two branches, it reached the Mediterranean at Antioch and Alexandria. This, on the whole, was the easiest and therefore the most important line of travel. To the north of it ran an overland route from China and northern India, along the shores of the Caspian to Trebizond on the Black Sea. At times a branch from this route which led up through Russia was open. Merchants who ventured with their caravans along this road traversed a rugged country, where they were frequently exposed to attack by the lawless inhabitants. A third course, lying to the south of the other two, had the advantage of being largely by water. This was less beneficial in a day when shipbuilding and the art of navigation were in their infancy than it would be now. This line of travel ran from the East Indies along the coast of India, across the Arabian Sea to the southern coast of Arabia, and from there, hugging the shore, to some point on the African coast of the Red Sea, such as Berenice, where goods were transshipped and sent by caravan down to Alexandria. Constantinople, controlling the Black Sea, and Alexandria, the Mediterranean port at which goods brought by two different routes were offered to the merchant, played leading parts in the commerce of the East. Any merchant wishing to engage in Eastern trade could hardly do so without a warehouse and trading privileges at one port or the other.

Down to the beginning of the eleventh century Eastern goods were carried from Constantinople, Antioch, and Alexandria to the ports of Italy, France, and Spain by the Syrians and Jews. Beginning with the year 1000 the Italian cities took an ever-increasing part in this trade. The Crusades served the double purpose of advertising Eastern goods among the well-to-do classes of western Europe and giving the Italian cities an opportunity to force from the Eastern rulers the trading privileges in their ports which they so sorely needed.

Rise of the Italian trading cities. The Italian cities of Brindisi, Amalfi, Pisa, and Genoa each played an important rôle in the Eastern trade for a time, only to be superseded by a rival. Venice entered the race for commercial greatness, forged to the front,

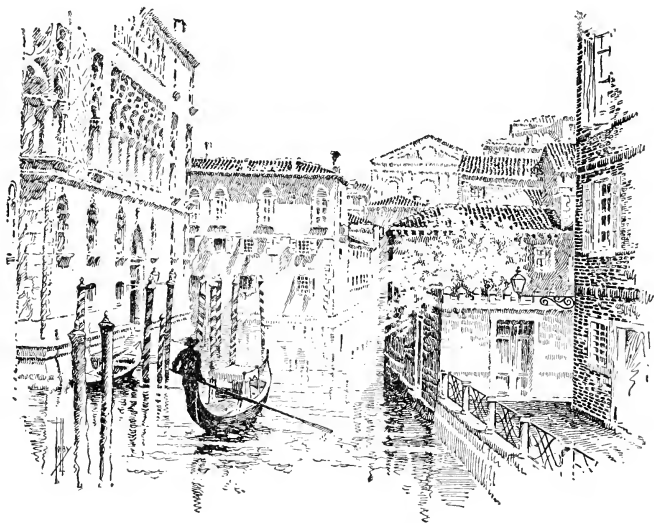
and retained her lead until the geographic discoveries of the fifteenth century transferred the center of the commercial world from the Mediterranean to the Atlantic Ocean. As early as the tenth century she had extensive trading privileges at Constantinople, and later, when Constantinople was tottering to its fall, she obtained similar rights of trade at Alexandria. She built up a colonial empire which included Crete, Cyprus, Rhodes, and innumerable



CATHEDRAL AND PALACE OF THE DOGES, VENICE

smaller islands. Thus she offered her mariners safe harbors in case of storm and was enabled to drive out of the Eastern trade all who did not pay her well for the privilege of doing business. Venice was connected by both land and water routes with the rest of Europe. Directly west a road led to Verona and Milan. From both these cities roads ran south to the central Italian towns, where there was an excellent market for Eastern products. Other roads led from these cities into France and Germany. In the Low Countries there was a city, Bruges, in which the trade of the north centered very much as the southern trade centered at Venice. At first the Venetians traded with Bruges by the overland route

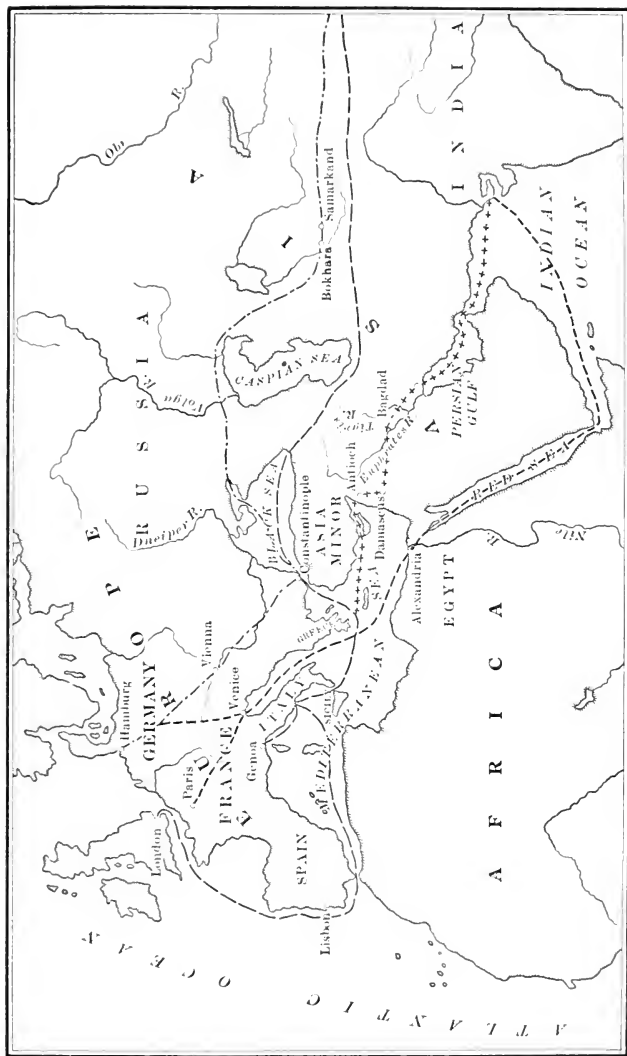
through France, but afterwards mariners grew more daring and ventured round by water. The fleet of Flanders galleys sailed once a year. On their way they stopped at various ports to buy and sell, so that it took them a year to make the trip. The goods that Venice carried to Bruges were sold not to the merchants of Bruges but to French and German merchants trading there, who



A CANAL IN VENICE

distributed them among the French, German, English, and Scandinavian cities. In time most of this business fell to the share of the Hanseatic League, which we have already seen at work in England.

Commerce and industry of Italy during the Middle Ages. *Development of Italy contrasted with England.* Of all the countries of western Europe, Italy benefited most from the Eastern trade, and partly for this reason she afforded the sharpest contrast to England during the Middle Ages. Down to the end of the period the merchants of England took no direct part in the Eastern trade, while the Italian cities began to carry Eastern goods to Europe as soon as the Teutonic invasions had fairly subsided.



ROUTES OF TRADE TO THE FAR EAST IN THE MIDDLE AGES

Eastern trade stimulated industrial and financial development as well as art and literature. As a result Italy was in 1300 where England stood in 1500, as far as industrial, financial, and commercial progress is concerned. The amount of Roman skill that survived in the two countries is a second point of contrast. In England no Roman cities and few if any Romanized craftsmen lived through the Anglo-Saxon conquest, while in Italy many of the famous cities of the Middle Ages were Roman cities which had weathered the storm of invasion. Something of the Roman technical skill was doubtless handed on from one generation of craftsmen to another, along with the Latin language, rudiments of the Roman law, and some municipal institutions. Only in this way may we account for the high degree of technical and artistic excellence of the Italian crafts in the Middle Ages. A third difference between the countries was that the manor system never fixed its hold on Italy as it did on England. Cities, the greatest foe of the feudal system, proved more than a match for the landholding nobles. The fourth point of difference was the growth in Italy of a large number of independent city states, each pursuing its own industrial and commercial interests, while in England the central government grew in strength and eventually curbed the different cities in the interests of the nation as a whole. At the close of the medieval period England, because of its geographical position and its strong central government, could look forward to a brilliant future, while the greatness of Italy was on the wane.

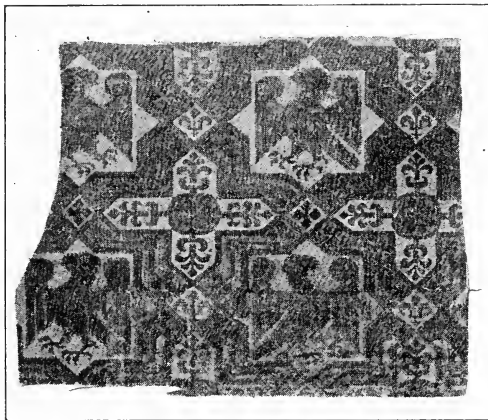
Italian cities. The Italian cities which attained prominence during the Middle Ages were not in all cases those which have been important either before or since. Rome, as the seat of the papacy, continued to be a great city throughout the period, although its population dwindled from several million to fifty thousand. Some skilled artisans found employment in the household of the pope, as they did in the households of lay princes, but as a financial and commercial center Rome had to give place to other, newer towns. As early as the ninth century Amalfi in the south and Venice in the north began to take a share in the Eastern trade, which for the century past had been largely in the

hands of the Saracens and Jews. After a long rivalry between the two, Amalfi succumbed. Pisa and Genoa helped to drive Amalfi to the wall, only to fall upon each other in a commercial struggle from which, in the thirteenth century, Genoa emerged triumphant. From that time until the middle of the fifteenth century Genoa and Venice were keen rivals for the commerce of the East. Of the inland cities Florence was one of the most important. Her greatness was due to manufacturing, overland commerce, and banking. Lucca early developed silk manufacturing, and from Lucca this industry spread to other cities, notably Florence and Venice. Siena was in the field as a financial center ahead of Florence, but was soon outdone by the latter city. Milan was then, as it is now, both a commercial and industrial center.

Effect of Eastern trade on industry. Very naturally, trade with the East first affected those cities which were directly engaged in it, such as Amalfi, Venice, Pisa, and Genoa, but from them its influence spread to the inland cities. The first effect was that of any trade—it stimulated manufacturing by opening a wider market for the special products of the district. The second effect was to improve the quality of products by presenting new models for imitation and to introduce new industries. Glassmaking came to Venice from Constantinople as well as the manufacture of cloth of gold and wrought leather. The third effect was that raw materials, such as silk, were introduced, and this made possible industries hitherto unknown.

Survival of Roman skill. Not all the rapid advance in the crafts which marked the eleventh and twelfth centuries was due to the influence of the East. In the cities where, under the protection of the bishops of the Catholic Church, the Latin population found refuge from the violence of the Goths and Lombards, craftsmen continued to follow their calling as far as the demands of the home market made this profitable. None of the elaborate and costly household furniture, armor, and other goods or the choice wines and oils which had found a ready sale in Roman times were produced now, for there was no one with the taste and the wealth to buy them and no workman could afford to make them for his

own enjoyment, but the simpler articles of everyday use were made as before. As soon as greater wealth and improved taste among princes and powerful churchmen offered a market for such products, fine textiles, gold and silver plate, carved furniture, and countless other beautifully worked articles of personal and household use were made. Italian goods became famous all over Europe and served as models and inspiration to the craftsmen of



Courtesy of the Metropolitan Museum of Art

FRAGMENT OF ITALIAN TEXTILE, THIRTEENTH
TO FOURTEENTH CENTURY

France, Germany, and the Low Countries, and, finally, England. In design as well as in workmanship the articles of Italian manufacture surpassed those made north of the Alps. Some of the greatest of the Italian artists did not disdain to sketch designs for jewel caskets or tapestries. In fact, both painting and sculpture

served an apprenticeship to architecture and the crafts before they were regarded as worthy to rank as independent arts.

Italian guilds. Along with some technical skill and a feeling for decoration the Italian craftsmen inherited guild organizations from their Roman forbears. The "artes," as they were called in Italy, bore a strong resemblance to the guilds of England. In place of the Merchants' Guild we find the Greater Artes, usually six in number. These were associations of manufacturing merchants who were engaged in foreign trade. The Calimala Guild at Florence is an example of this type of organization. Merchants of the Calimala finished and dyed textiles woven in Flanders, France, and England, stamped them with the label of the

Calimala, and reëxported to northern Europe. On the label was recorded any stain or rent which marred the cloth, as well as the exact measure of the piece. Under such regulation it is no wonder that the Calimala label was a guaranty of quality and that Calimala cloths brought a higher price and found a readier sale than did unlabeled goods at the fairs in northern Europe. Besides enjoying the advantages of the Calimala label, the merchants of the guild were protected while in foreign countries by consuls sent out by the guild. These consuls hunted up safe inns at which the merchants might lodge and protected by every means in their power the lives and property of the guildsmen. That the merchants might be granted greater security as well as special trading privileges, the guild sent ambassadors to the sovereigns of the countries where they traded.

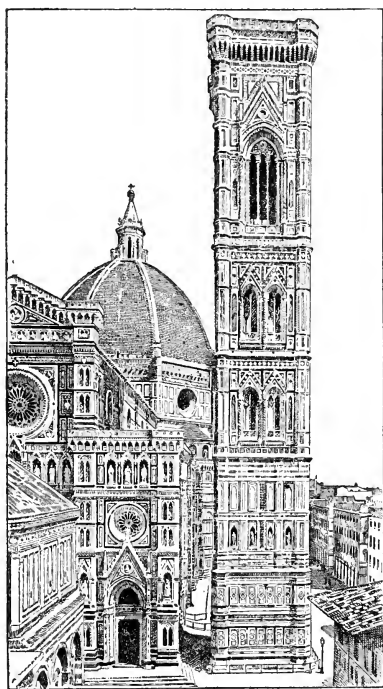
Besides the greater guilds there were the lesser guilds, which correspond to the craft guilds of England. To these belonged the artisans who manufactured goods which they sold at retail in the city or disposed of at wholesale to the members of the greater guilds. In foreign commerce they had no share. Among the lesser guilds were those of the shoemakers, leather dressers, armorers, and carpenters.



Courtesy of the Metropolitan Museum of Art

ITALIAN GOTHIC ARMOR, 1480

Financial institutions in Florence. Such powerful combined industrial and commercial institutions as the Calimala could do much to extend the market for the products of Florence, but without the support of the bankers of the city their activities



BELL TOWER AND CATHEDRAL,
FLORENCE

would have been seriously handicapped. While practically all the surplus wealth of northern Europe was being consumed in profitless undertakings such as the Crusades, or in barbaric splendor of personal adornment and household decoration, crowns and chains of gold set with jewels, chairs of silver, and the like, the merchants of Florence had learned to do business on a money basis and to accumulate and invest that money in their manufacturing and commercial enterprises. Banking institutions were developed to handle money, and a credit system was created. From all parts of Europe kings and princes came to the bankers of Florence to borrow money. Un-

fortunately these same kings and princes had not the keen sense of business honor which the merchants had developed, and they sometimes refused to pay their debts. Once, at least, such refusal caused the failure of the banking house involved. On the whole, the bankers were very successful, and their support did much to make possible the great expansion of the industry and commerce of Florence. Other Italian cities followed the example of Florence,

and even after the loss of her commercial supremacy Italy continued to be the financial center of Europe.

Summary. Owing partly to her heritage from the Roman Empire and partly to her geographic position, Italy earlier than any other European country reached a high state of industrial and commercial development. Here many independent commonwealths sprang up in which merchants and craftsmen were the rulers. Under their government commercial, industrial, and financial institutions rose and flourished. Unfortunately these commonwealths never achieved any unity among themselves, but wore themselves out with wars of city against city. By the opening of the mercantile period they had ceased to be progressive in their methods, and their lack of coöperation was a serious handicap in competition with the rising nations of the north.

Germany in the Middle Ages. Characteristics of economic development. The economic development of Germany in the Middle Ages was marked by two characteristics: a high development of both industry and commerce and a strong tendency among merchants and craftsmen to organize and maintain powerful associations for the protection of their interests. By the time the Mediterranean trade was being transferred from the southern Italian cities to Venice and Genoa, German merchants were carrying goods to England. By the end of the fourteenth century they monopolized the trade of the Baltic as completely as Venice did that of the southern inland sea. In industry they showed especial ability in metal work, the manufacture of linen cloth, and the making of beer and wine. The spirit of coöperation showed itself in the creation of craft guilds and city governments and in those leagues of cities of which the Hanseatic League is, perhaps, the most famous.

Roman and Italian influence. The fact that the handicrafts reached a high state of development in Germany earlier than in England was due to two causes. In Germany, as elsewhere on the Continent, something of the Roman skill was handed down by craftsmen through the disordered period of the invasions. Secondly, Germany was closely connected with Italy politically.

German officials and German soldiers followed their emperor into Italy on the business of the Empire even before the German Crusaders flocked to the Italian seaports on their way to the Holy Land. Merchants followed close on the heels of the military. In Italy, as we have seen, the crafts soon revived after the invasions. Trade with Italy, and through Italy with the East, furnished models which the German craftsmen were not slow to imitate.

Effect of a weak central government. The tendency to form associations for mutual protection which marked German business life in the Middle Ages was due in part to tribal customs, which did not entirely disappear when the tribal organization gave place to a government based on territorial divisions instead of family relationship. In even larger measure it was due to the want of a strong central government. In this respect Germany was no different from the other European states in the early part of this period, but by the time France and England had evolved a national government strong enough to insure a merchant in the possession of his property and the peasant and craftsman in the enjoyment of his customary rights, the imperial government of Germany had been reduced to a mere shadow. This meant that strong men, whether they were churchmen, nobles, or burghers, did pretty much as they pleased as far as the government was concerned, and the weak were at the mercy of the strong. Churchmen ruled their estates as though they were kings. Nobles oppressed the peasants on their manors by collecting heavier and heavier dues from them and gradually depriving them of their customary rights in the common and woodland, and taxed, robbed, and killed such unprotected merchants as came in their way. The abler and richer merchants, finding that no man could do anything by himself, banded together to protect themselves and monopolize commerce. Craftsmen organized powerful guilds which fought the merchant organizations, and the journeymen organized to fight their masters. Associations which came into existence to meet a need for protection proved efficient weapons

of offense as well as of defense. With them the merchants forced from their neighbors most advantageous trading privileges. Just how this worked we shall see when we take up in detail the great Hanseatic League.

Agriculture. In Germany estates existed similar to the English manor. On these, subject to the lord, lived three classes of people—the free, the unfree, and the slaves. The Black Death did little to improve the condition of the German peasants. By the end of the Middle Ages their condition was growing worse instead of better. The lords were inclosing the meadows for their own use and charging the peasants heavy rates for all wood cut in the forest, besides increasing the already burdensome dues which they exacted.

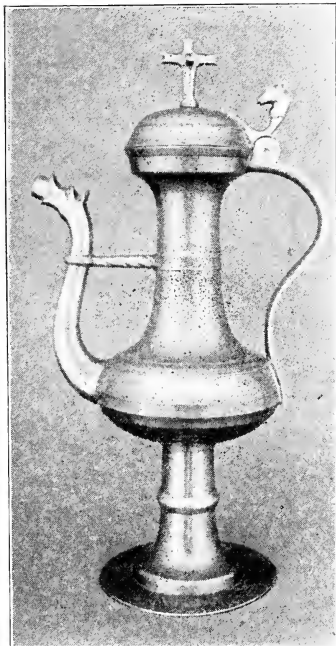
In farming the land the three-field system was in vogue. Much the same crops—wheat, barley, rye, oats, peas, beans, and hops—were raised as were raised in England. Such live stock as chickens, pigs, sheep, and cattle were found on most farms. One branch of agriculture for which England was entirely unsuited was carried on with great success. This was the raising of grapes.

Mining. Mining was an important industry in some parts of Germany during the medieval period. That the Germans developed considerable skill in this line is evidenced by the record that German miners were brought to England to teach the English their method of mining.

Fishing. Along the shore of the Baltic there were many towns which grew to great prosperity because of the fishing industry. For several centuries fish in great quantities inhabited the Baltic. Shipbuilding and ocean commerce both followed the development of the fisheries.

The handicrafts. The production of manufactured goods flourished in Germany even more than in England. Some of the craftsmen were attached to the households of the princes and abbots, but far the greater number lived and worked in the cities. Each craft was situated in its own quarter of the city. Each master had his own little shop where he worked in the

midst of his journeymen and apprentices in full view from the street. Although each shop was small, the total production of manufactured goods was large because of the great number of shops. Great skill was developed in such lines as clock-making and all kinds of metal work.



Courtesy of the Metropolitan Museum of Art

BRASS EWER. (GERMAN, FIFTEENTH CENTURY)

Guilds. The craft guilds of Germany resemble those of England in most respects. They differed from those of England in that they waged a sharp struggle with the merchant organizations before they obtained their economic and political rights in the towns. A second point of difference lay in the guild rules. In Germany a journeyman was a journeyman indeed. When a lad had finished his apprenticeship, which lasted from two to four years, he was required to visit other cities to broaden his knowledge of his craft. In each city that he visited he took service with some master. This travel period frequently lasted two years and in some cases could only end when the craftsman had designed

and executed a masterpiece which was judged worthy a master by his guild. If a journeyman lacked either the money to buy the material for his masterpiece or the artistic ability to create an original design he might remain a journeyman all his life.

Journeyman's societies. Because there came to be a large class of journeymen who never hoped to become masters and play an active part in the guilds, journeymen's societies were formed. These societies resembled the guilds in organization, but were

entirely separate from them. They undertook to entertain the visiting journeymen and find them work, and assumed the protection of the interests of the journeyman as opposed to the master. In the fifteenth century, when the crafts were at their height, the masters who were already in the guilds, in order to increase their own profits, attempted to shut out all but a few journeymen from becoming masters. They were so far successful that the class of permanent journeymen was greatly enlarged and the journeymen's societies thereby strengthened. The societies organized and carried through strikes for better fare, higher wages, or shorter hours. The funds of the associations were used to sustain the strikers, and it was not unheard of for societies in one town to help finance a strike in another town. Just how much these organizations might have done for the German workingman under favorable conditions we shall never know. A terrible civil war, occurring at the very time when foreign nations were offering serious competition to German foreign commerce, brought disaster to the economic prosperity of Germany.

Commerce; geographical advantages of Germany for commerce. The industrial development of Germany in the Middle Ages would have been impossible if the German merchant had not been active in supplying raw material from abroad and disposing of the finished products in the same markets. Next to the Italians, the Germans were the greatest traders of the period. Their commercial greatness was due in part, at least, to the geographical conditions in the midst of which they lived. On the north Germany touched both the North and the Baltic Seas. A ship sailing from Hamburg could land its cargo on the wharves at London, Bruges, or Bergen. Lübeck, on the Baltic, was in direct water connection with Wisby, Stockholm, and Danzig. In the south the Alps shut Germany off from Italy, but the Germans soon found passes which admitted them to the southern country. On the western side of the country the Rhine furnished a highway of travel from the Alps to the border of the Netherlands. Another line of travel from south to north started from Venice, crossed the Brenner Pass, and passed through

7 Augsburg and Nuremberg on the way to Hamburg. Situated like a natural highroad between the Mediterranean and the northern seas, it was not surprising that the initiative and efficiency of the German merchants succeeded in making their nation first among the nations of the north in commerce.

Impediments to commerce. On the northern seas the German merchants faced two serious difficulties—pirates and rough weather. The first they dealt with by waging successful war upon them, while the second could only be overcome by the invention of stronger and larger boats. The river routes were less endangered by the violence of nature, but the obstacles raised along them by the hand of man were countless. At first nobles robbed the merchants whenever they could. As a more civilized age brought higher ideals, despoiling the merchant was given a legal pretext. Innumerable tolls were collected on every possible excuse. The merchant paid for the privilege of passing under a bridge or sailing past a noble's castle. On the highways the conditions were as bad. Toll gates were stretched across the roads, at frequent intervals, at which dues were collected for the care of the roads, and the money was pocketed by the lord of the district, while the highway continued as bad as ever. Highwaymen were numerous and bold in Germany, as they were elsewhere in Europe at this time.

The merchant. The men who had to face all this opposition to the conduct of their useful calling had the added disadvantage of being a class despised by the nobles and regarded with indifferent contempt by most of the emperors. The merchant was a man of peace, and then, as now, was despised by men of violence for this very quality. In spite of all these obstacles, merchants with their wares strapped on the backs of pack animals found their way from one trading center, fair, marketplace, or royal household to another. The stay-at-home merchant, who does business from his comfortable office, was unknown in medieval commerce. Physical courage that would enable the trader to take a hand in a fight when need be, and the self-control, far more rare in those days, which made it possible for him to stand

calmly by when resistance was hopeless, were essential qualities for the merchant. In the course of his work he learned more of geography, foreign customs and goods, and the principles of finance than anyone else in Germany. The constantly changing problems which his business thrust upon him developed his intelligence and his reasoning powers far beyond that of the nobles who so heartily despised him.

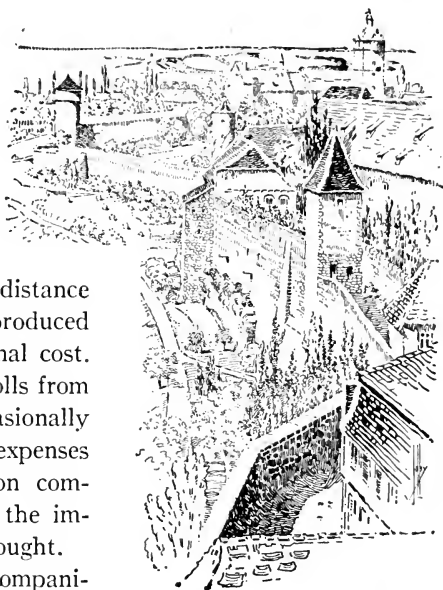
Rewards of commerce.

Just because the impediments to commerce prevented all but the most persistent from engaging in it, the rewards of the successful merchant were great.

The price of goods at any distance from where they were produced was many times the original cost. The noble who collected tolls from the merchants and occasionally robbed them paid the expenses which his conduct laid on commerce in the price of all the imported goods which he bought.

Towns. As a natural accompaniment to commerce, towns grew up. The merchants were the prime movers in their growth toward independence and self-government. In Germany, as elsewhere, the privilege of regulating buying, selling, and manufacturing in the town, as well as those political rights which we associate with self-government, were purchased by the towns from their rulers.

Factories. Cities trading with a distant region found it impossible to do any regular business without a protected warehouse in the district in which to store their goods, living quarters for the men who were kept on the ground, a guaranty of fair



FORTIFIED TOWN, GERMANY

treatment in legal disputes with the natives of the country, and the right to try cases arising among themselves according to their own law. A warehouse with living quarters, offices, a hall, and a chapel and surrounded by a wall was called a factory. Factories were sometimes established in small ports; sometimes in villages, where they soon overshadowed the original settlement; and sometimes in important cities, where they existed as a foreign quarter enjoying extensive privileges of self-government.

Leagues of cities. So far the development of the German cities was not unlike that of the cities of Italy. When the Italian cities had found prosperity in trade and manufacturing they secured protection from pirates and highwaymen and the violence of ignorant rulers by expanding into city states which were strong enough to make themselves feared. On the other hand, the German towns worked out the same problem by forming leagues among themselves. The cities along the Rhine organized the Confederation of the Rhine Towns, those in southern Germany the Swabian Confederacy, and the towns of the north the Hanseatic League.

Origin of the League. On the shores of the North and Baltic Seas a number of towns grew up whose prosperity was founded on the fishing industry. Among these were Hamburg, Lübeck, and Bremen. The citizens of these places could turn very readily from fishing to commerce when opportunity for profits offered. By the thirteenth century the cities of Hamburg and Lübeck were sufficiently interested in commerce to form an alliance for the protection of their merchants by land and sea. This alliance expanded, by the admission of other towns, into a league of more than seventy cities.

Purposes of the League. The purposes of the League were, first and foremost, protection for the merchants and their goods wherever they might go: pirates were to be driven from the seas and highwaymen from the roads; bridges and roads were to be kept in repair; even kings who wantonly attacked the ships or factories of the League were to be punished, events proved, although when the League was formed the members

hardly dared to hope so much. Secondly, the League could expect to obtain trading privileges from neighboring rulers far in excess of anything a single city could buy. Such concessions would enable them to undersell their competitors and to drive them out of business.

Government of the League. In an age when suspicion born of ignorance and mutual ill will between cities was the rule, such an organization as the Hanseatic League was a triumph of wisdom and foresight, and the reward, in the form of profits which flowed into the pockets of the members of the League, was accordingly large. It is interesting to see what machinery of government was created to make possible its achievements and prevent that discord among the members which would soon have led to dissolution.

Government of the Hanseatic League. The members of the Hanseatic League were either cities or individual merchants. The affairs of the League were handled by a diet which met when occasion demanded, usually once a year. At this diet members were tried for breach of the laws of the League, and measures to be taken in the coming year were agreed upon. If any city failed to send delegates to the meeting, that city was bound by any action taken by those present just the same. The carrying out of these measures was left to the individual cities, but woe to the city which failed to enforce among its merchants obedience to the rules of the Hansa! Such a city was unhansed—that is, deprived of its membership in the League. She could no longer buy and sell in the factories of the League or in the other Hansa towns. Her fish and other goods rotted on her wharves for want of a market. She soon found that no price was too high to pay for readmission to the organization whose laws she had flouted.

No regular army, navy, or treasury was maintained. When a war with the pirates or a king of Denmark or England was to be waged, a tax was laid on the commerce of the League, an army or navy raised, and the business in hand attended to. When the war was over the forces were disbanded again.

Articles traded. The articles traded by the League fall into three classes: first, the goods manufactured by the cities of the League; second, the raw materials brought in to supply their own shops; and, third, the goods of other countries which they carried from one part of northern Europe to another. In the first class are salt fish, beer, linen cloth, silk and woollen textiles, dressed furs, and worked-metal articles of all kinds. These goods were sold at Bruges to French, Italian, and Spanish merchants, who carried them to their respective countries, or were exchanged at the factories of the Hansa in London, Bergen, and Novgorod for the raw products of the region.

From England the Germans brought home such products of the second class as wool, hides, grain, and cheese. From the Scandinavian peninsula came copper, iron, skins, wood, potash, pitch, tar, and building stone. From Russia the Hansa merchants brought to Germany wax, leather, skins, and tallow.

In the third class of goods we find oil, wines, silks, and fruits which they bought of the merchants at Bruges, Eastern products brought up from Venice by the South German merchants, and Flemish cloth. Not infrequently the Hansa merchants carried English wool to Flanders, sold it to the Flemish weavers, bought it back as cloth, sold it to the Englishman who had raised the wool, and made a handsome profit on each transaction.

Fall of the League. The League flourished until the end of the fifteenth century. With the beginning of the commercial period new forces began to act which the Hanseatic League was not equipped to meet. Trade shifted its center from the Mediterranean, Baltic, and the North Seas to the Atlantic. National governments arose which were strong enough to take from the Hansa the monopoly of trade which in their weaker days she had forced them to grant her. Antiquated business methods were still employed when more efficient methods were being introduced elsewhere. Lastly, the herring which had made the wealth of Hamburg and Lübeck deserted the Baltic for the North Sea, where the Dutch fishermen were reaping rich harvests. All these changes brought ruin to the League, and it was eventually dissolved.

Summary. Germany in the Middle Ages was second to Italy only in commercial and industrial activity. By the development of powerful city leagues the German merchants attempted to cope with the dangers which beset their business. Like the Italian merchants they accumulated capital and did business on a larger scale than the Englishman of the period. By the end of the Middle Ages the Hanseatic League had begun to decay. This boded ill for the economic future of Germany, for at this very



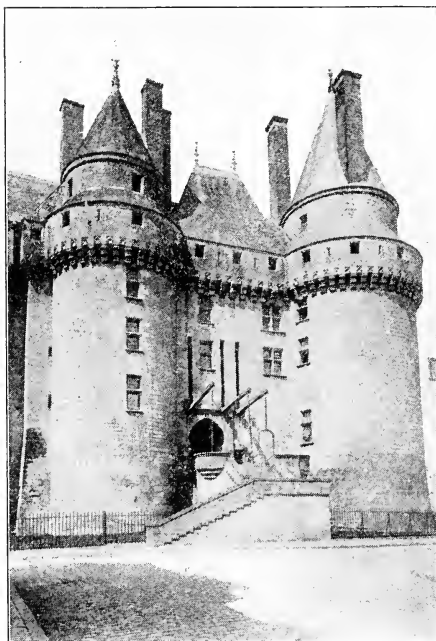
INTERIOR OF A FRENCH CASTLE OF THE LATE MIDDLE AGES, LANGEAIS

Some of the furniture belongs to a later period

time the governments of Spain, France, and England were becoming powerful and preparing to back up their business men in their foreign relations.

Commerce and industry in France during the Middle Ages. In France commerce and industry followed much the same course that it did in England. Manors, fairs, towns, merchant guilds, and craft guilds all came into existence and played their part in the economic life of the country. Only three points of difference stand out. First, earlier than in England, the arts and crafts reached a high state of development, commerce became important, and towns obtained their chartered rights. Second,

by the middle of the fourteenth century the French towns had begun to decline because of the constant wars which were fought on French soil. Asking of their royal government only security from the foe, they made no attempt to defend their chartered



EXTERIOR OF A FRENCH CASTLE OF THE
LATE MIDDLE AGES, LANGEAIS

Castles similar to this were built in all European countries and in England

rights in the face of the aggressions of that government. By the end of the period, when the English towns were in full flower, the towns of France had been shorn of all their greatness. The third point of difference between the two was that the Black Death did not do so much in France to set the villain free as it did in England. It was not until the French Revolution, which began in 1789, that the French peasant obtained his freedom from some of the most oppressive dues which he was supposed to owe his lord.

Industry and commerce in the Low

Countries during the Middle Ages. The Low Countries, or the Netherlands, in the Middle Ages comprised what are now the countries of Holland and Belgium. This district was divided up into a number of provinces (seventeen at one time) ruled by lords who were, most of them, subject to the king of France or the Emperor of the Holy Roman Empire. By the year 800 there had grown up

here cities of some size. These cities were swept away by invasions of the Danes, but they reappeared and by the eleventh century had won rights of partial self-government. Most important of all these towns was the city of Bruges. Connected with the sea by a canal sufficiently deep and wide to admit seagoing ships to the city wharves, Bruges occupied as important a place in the commerce of northern Europe as did Venice in that of the south. Here gathered merchants with their wares from Italy, the German cities, and France. Towards the end of the period political misfortune fell upon Bruges, and the town of Antwerp began to take her place as a trading center. Brussels, Malines, Liège, Ghent, Amsterdam, and a dozen more all played their part in the commerce and industry of the Low Countries.

Important industries of the region. Although the commerce of a town like Bruges added much to the wealth and prosperity of the city, industries were from the first as important as trade in building up the towns. In fact, the weaving industry was well established

before the towns took definite form. As it was the first, so it remained the most important industry of the country. The finest and most beautiful woolen cloth of the time was made in the cities of the Low Countries and exported to all parts of



Courtesy of the Metropolitan Museum of Art

PRICKET CANDLESTICK OF COPPER GILT AND ROCK CRYSTAL
(FRENCH, THIRTEENTH CENTURY)

The spike at the top was pushed into the bottom of the candle

Europe. The making of fine tapestries also engaged the more artistic of the weavers. Lace-making also flourished. In each one of the important lace-making centers a special type of lace was evolved which took the name of the city where it was made ; the best known of these today is Brussels lace, which is still made



FRENCH CARVED WOOD CHEST OF THE FIFTEENTH CENTURY

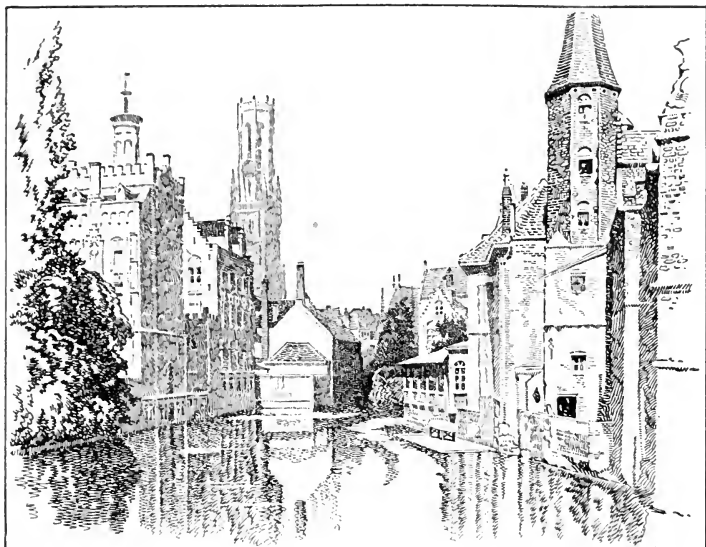
Compare the Gothic design carved on the front with the ornament used for the console of Louis XV on page 250

by hand in Brussels as it was in the Middle Ages. The northern provinces, lying in the very lap of the North Sea, developed the fishing industry and boat-building.

In a district where towns early reached great importance the manor system soon broke down. Money circulating from the town market to the rural districts made easy the payment of dues in specie instead of in service. With this change the villain attained comparative freedom.

In the development attained in industry and commerce the provinces of the Netherlands compare more closely with Italy

than with the more backward countries of England and France. Although the Lowlanders did not carry their own or others' goods abroad so much as did the Italians, because of their liberal policy toward the merchants of other countries a large volume of business passed through their cities. Industrially they compared very



BRUGES

Bruges was sometimes called the "Venice of the North," partly on account of its extensive trade and partly on account of the canals which intersect the city and which once connected it with the sea

favorably with their southern neighbors. They manufactured goods of excellent quality in great quantity.

The rest of Europe played little part directly in the evolution of industry during the period which we are studying. On the east Russia and Poland were half-savage countries with which the other European nations had little contact. Spain was in the hands of the Moors, who were Mohammedans and for this reason looked upon with horror by the other European peoples.

Although the Moors might have taught their neighbors much about better methods of farming and various crafts, religious differences prevented the contact which would have made this possible. Little knowledge sifted through the religious barrier, and,



Courtesy of the Metropolitan Museum of Art

MEDIEVAL TAPESTRY. (FRENCH, FIFTEENTH CENTURY)

on the whole, it may fairly be said that what industry and commerce existed in the year 1492 was due to the evolution which they had undergone in the five countries which we have studied.

TOPICS FOR DISCUSSION

1. Compare the merchant guild of an English town with the Calimala of Florence.
2. Why did banks arise in Italy sooner than in England?
3. How did the craft guilds of Germany differ from those of England?
4. What was the purpose of the Hanseatic League?

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CHAPTER IX

THE MERCANTILE PERIOD, 1492-1767

Explanation of name and dates. Following the Middle Ages came an era of great commercial expansion known as the mercantile period, from the important part which merchants played in it. This period opened approximately with the discovery of America in 1492 and closed with the year 1767, when the invention of the spinning jenny ushered in the Industrial Revolution. These dates should not be taken too rigidly. We must remember that many of the characteristics which marked the period had begun to appear before 1492, and others continued to hold a prominent place for years after the Industrial Revolution had begun.

In order to enter into the spirit of the mercantile period let us consider for a moment the conditions in Europe in the year 1492. First of all, we must remember that this was a time when a great many new ideas were in the air. Almost two hundred years before the Italians, French, Germans, and English had begun to discover Roman law, learning, and art. Roman statues, vases, and carved-stone coffins, long buried in the earth, were dug up and eagerly studied by sculptors. Poems, histories, scientific works, and law codes were dragged from their hiding places in the libraries or cellars of the monasteries and read. Italy first, —as here the relics of Roman civilization were more abundant,— and later the rest of the world, came into its heritage of Roman knowledge and ideas. This revival of learning is called the Renaissance, or new birth of Roman civilization.

Every field felt the effect of the Roman inspiration. Architects imitated the Roman buildings, and a new style of architecture sprang up all over Europe. Craftsmen copied Roman designs and adapted them to new uses. Even poets and historians aped classical models. In fact everything Roman was very much in fashion

for several centuries. After a time imitation gave way to more original work. Europeans had received their schooling in the learning of the past and were ready to work on beyond their teachers. This point had been reached when the era which we are studying opened.

Political conditions in 1492. The political conditions at the opening of our period are also important to an understanding of the industrial development of the time. During most of the Middle Ages Europe had been divided up into small communities which were grouped under the nominal authority of weak royal governments. In England, for instance, the nobles who ruled the great estates and the townspeople protected by their charters paid little attention to the king. In 1492 Germany, Italy, and the Netherlands were still in this condition. In all these countries the cities and small states into which they were split up laid and collected their own taxes, maintained their own armies and navies, and regulated and protected their own commerce and industry. The central government had only a shadowy authority over them.

Rise of nations. In France, Spain, and England the conditions were different. In each of these countries the central government had in 1492 gained considerable control over the local divisions of which the state was composed. One treasury served the country, and one army and navy defended it. The royal coins gradually displaced all others, and the royal laws slowly took the place of the tangle of local systems which had previously served as laws. Commerce and industry began to be regulated in these countries by the national authorities instead of the city governments.

Effect of the rise of nations. *A national market.* The appearance of strong national governments in Spain, France, and England had a tremendous effect upon commerce and industry. It became possible for the merchants of a country to open up a national market for the industries of that country in place of the local markets which industry had served before. As long as each English town, for instance, was separated from the others by dangerous open country and different trading customs and regulations, which made it difficult for the merchants of any other

English town to sell in its markets, the craftsmen of the town had the town market pretty much to themselves. The townspeople had to buy what they made or go without. On the other hand, there was no use in their producing more than the town could buy.

With a strong national government came order and protection for life and property and certain uniform rights to English merchants everywhere in England. With this change a great opportunity was presented to middlemen of all sorts, and their number and activities greatly increased. It became profitable to transport goods of a superior quality made in one town to almost every other town in the kingdom. The merchants studied the needs of various localities and the products which would best meet those needs, and brought the producer and consumer together on a more profitable basis than ever before. We shall see a little later how their activities brought about a great increase in manufacturing during the period upon which we are entering.

Effect of the rise of nations on foreign commerce. Commerce within the country was benefited scarcely more than foreign commerce by the establishment of a strong national government. All that a league of cities like the Hanseatic League had tried to do for its members a national government could do still better, if the ruler chose. Fortunately most kings were ready to protect the merchants who sailed under their flag, because from the activities of those same merchants they derived a large part of their revenue. Royal navies dealt with the pirates who had done much in the past to make foreign commerce unprofitable. Royal armies backed up the merchants who established trading posts in uncivilized regions. Kings made treaties with each other which guaranteed the protection of the merchants of each country in the land of the other. Before the period was over, kings had gone to war with each other over the possession of trading rights and trading posts. All this resulted in an expansion of foreign commerce beyond anything ever known before, and in that expansion the lion's share went to the nations which had created strong central governments.

Conquests of the Turks. Quite as powerful as the rise of nations in their effect upon foreign commerce were the geographical

discoveries of the fifteenth century. These discoveries were due in large measure to the conquest of Constantinople, Alexandria, and other trade centers of the Near East by the Turks. Through these centers passed the jewels, silks, and spices from the Far East. The Turks were a barbarous race, Mohammedans in religion, more interested in torture and murder than in commerce, and they made it almost impossible for Christian merchants to trade in their dominions. As a result of the dangers and difficulties which attended the Eastern trade it shrank to small dimensions. Very few Eastern goods were imported, and consequently what little there was commanded fabulous prices in the markets of western Europe. This turned the attention of mariners, statesmen, and merchants to the possibility of finding some new route to the land from which these goods came and so making themselves and their nation exceedingly rich.

Geographical discoveries. First of all the Western peoples to look for a better path to India were the Portuguese. Facing the ocean as they do, they naturally sought a pathway across its bosom. Sailing out and turning to the south they worked down the coast of Africa in the confident hope of discovering an all-water route to the east. This enterprise, which began in 1426, combined something of the crusading spirit with the desire for gain. Legend had it that a Christian prince, Prester John, dwelt in Africa south of Egypt, and with his help the Mohammedan was to be forever vanquished. By going a short distance down the coast of Africa the Portuguese expected to find a passage through to the land of Prester John and thence to the Spice Islands. It was sixty long years before Dias doubled the Cape of Good Hope and shattered all illusions as to the size and shape of Africa.

It now became apparent that by this route the journey to India would be long and hazardous at best, and others began to look for a shorter way. Among these was Columbus. Although he did not find the short route to India for which he was looking, and died a disappointed man, still his discoveries soon began to influence deeply European commerce.

Effects of geographical discoveries on center of commerce. With the discovery by the Portuguese of a water route to India, the center of commerce shifted immediately from the Mediterranean to the Atlantic Ocean. Although the water route was long it was much safer and cheaper than the overland routes through a hostile country. Such cities as Venice, Genoa, and Alexandria ceased to be bustling ports in which the merchants of the world came and went. Their streets were deserted, their warehouses empty, and their ships rotted at their wharves. The Hansa towns, which had formed one link in the old system of distribution, sank rapidly into obscurity. In their places Lisbon, Antwerp, and London rose to power. Portugal grasping the Eastern trade and Spain that of the New World were the first to profit by the geographical discoveries. In a short time Spain absorbed Portugal, and the two lost much of their trade through the unwise policy of the Spanish government. To the Dutch, French, and English passed the commerce which the Spanish so foolishly threw away. Before the end of the mercantile period the English had wrested from their neighbors much of their share, and England had taken her place as the leading commercial nation of the world.

New markets. The geographical discoveries had the further effect upon commerce in that they opened up new markets for European goods in Africa, Russia, and America. To these less civilized countries the European nations sent their own manufactured wares, which they exchanged for native products. In the trading posts along the coast of Africa the European ship captains offered knives, glass beads, gay cloth, and rum, receiving, in exchange, slaves, captives taken in war, ivory, and gold. From Russia came furs, hemp, flax, and tallow. At first the New World was valued only for the gold and silver which came from Mexico and Peru, but soon the fisheries, the tall forest trees so excellently fitted to serve as the masts of ships, and the fur-bearing animals from the northern continent assumed their due importance in the European estimate of the value of the Americas. As the English and French colonies advanced enough

to produce beyond their own immediate needs, such commodities as tobacco, naval stores, and iron were sent to Europe. In return Europe sent the colonies fine manufactured goods. And the richer the colonies became, the more goods they were able to purchase from across the water.

Increased use of metallic currency. The geographical discoveries had a third important effect on commerce and industry. From America and, to a less extent, from Africa came quantities of gold and silver. By 1492 the ablest business men had come to realize the immense advantage of carrying on all business transactions on a money basis, and in England at least this idea had penetrated all classes of society and had been taken up by the government. Villains had already become freemen by winning the right to pay money instead of service to their lord. Journey-men were asking for all their wages in money instead of part in board and lodging and part in cash. The king was attempting to collect sufficient taxes in money so that he could run the government on a money basis. Henry VII realized as clearly as the merchants and manufacturers of his realm that money was power, and he accumulated a surplus with an enthusiasm unequaled by any of his royal contemporaries.

For a nation to do business on a money basis means that there must be either a very large amount of currency in circulation or a credit system by which slips of paper known as checks, bills of exchange, etc. take the place of gold and silver coins. There was nothing but the meager beginning of a credit system in Europe in 1492 and, at the same time, there was only a very limited supply of gold and silver. If American silver had not begun to pour into Europe very soon, payments in service and kind would have continued for many years instead of speedily dying out, and business would have been seriously hampered. As it was, the discovery of American silver mines made possible an extension of money economy and so facilitated commerce and the accumulation of capital which was later invested in industry.

The mercantile system. To meet the peculiar economic conditions of the mercantile period a policy known as the mercantile

system was adopted by most of the states of Europe. This system was built upon the principle that the more wealth a country possessed, the better off that country was. Of course this is true enough, but unfortunately most statesmen took wealth to be gold and silver coin. Only here and there were there men clever enough to understand that coins are simply a medium of exchange, the counters in the game which enable wealth to move easily from place to place. Some of the laws which were made in accordance with this policy were intended to encourage the industries of the country for which they were framed, but some only aimed to keep as much gold and silver as possible within the country. Many governments forbade the export of gold and silver coin. All encouraged any trade which brought gold and silver into the country. For instance, England discouraged by heavy duties the importation of manufactured goods from France and Holland for which she might have to pay in money, but encouraged the import of raw materials from America, as these were paid for with English manufactures. Imports of raw materials had the added advantage that in the hands of English workmen they were converted into articles of greater value than the imports of which they were made. In Spain objection was made to allowing the people to eat imported fish when they might be fed on home-grown meat. Economists of that country advocated that the number of fast days should be reduced in order that the coin of the country might not be carried abroad to pay for fish.

In order to increase the commerce of the country and so, indirectly, its wealth, nations passed navigation laws which made it difficult for the ships of any other nation to trade extensively in their ports. Each country regarded its colonies as its own exclusive property which should be managed entirely for the benefit of the mother country. With this end in view the commerce and industry of the colonies were hedged about with restrictions which sometimes seriously hampered their free development. This hurt the mother country, too, although the statesmen of the day did not see it, because the less prosperous the colonies were, the less they could buy from the mother country.

The mercantile system also included the minute regulation of the industry of a country as well as its commerce. Bounties were offered to those who would establish an industry which statesmen hoped would be beneficial. The making of gunpowder was encouraged in this way so that there might be enough in time of war. Special privileges were bestowed on anyone who established a new industry which had not been carried on in the country before. Such industries would make the nation independent of imports and so less likely to send abroad its coin. In order that industries might be carried on in the most profitable way, what they produced and how they produced it was often regulated down to the most minute detail. In France the government determined what width of cloth should be manufactured. Hours of labor, wages, and prices were all determined at one time or another by government decree.

Such government regulation of industry and commerce would have been far more hampering if the laws had been thoroughly carried out. As a matter of fact they were seldom well enforced. Even today it is easier to make laws than to enforce them, and in that age the executive machinery of government was far less efficient than it is today. Business men dodged government rules and did business in the way which they found most profitable.

Development of England in the mercantile period. Although England was one of the backward nations of Europe at the beginning of the mercantile period, she soon caught the new spirit which the Renaissance and the geographical discoveries had produced. From the first she was blessed with an excellent government. In due course she developed her commerce and her industries until she attained first place economically among civilized nations. It was at this point that she stood in 1767.

Before England began her rise to commercial greatness a fundamental change had taken place in her agricultural system. This was the creation of inclosures. An inclosure is what its name implies—a plot of ground fenced in. Most of the early inclosures were intended for sheep-grazing, and so it is of these that we shall speak principally.

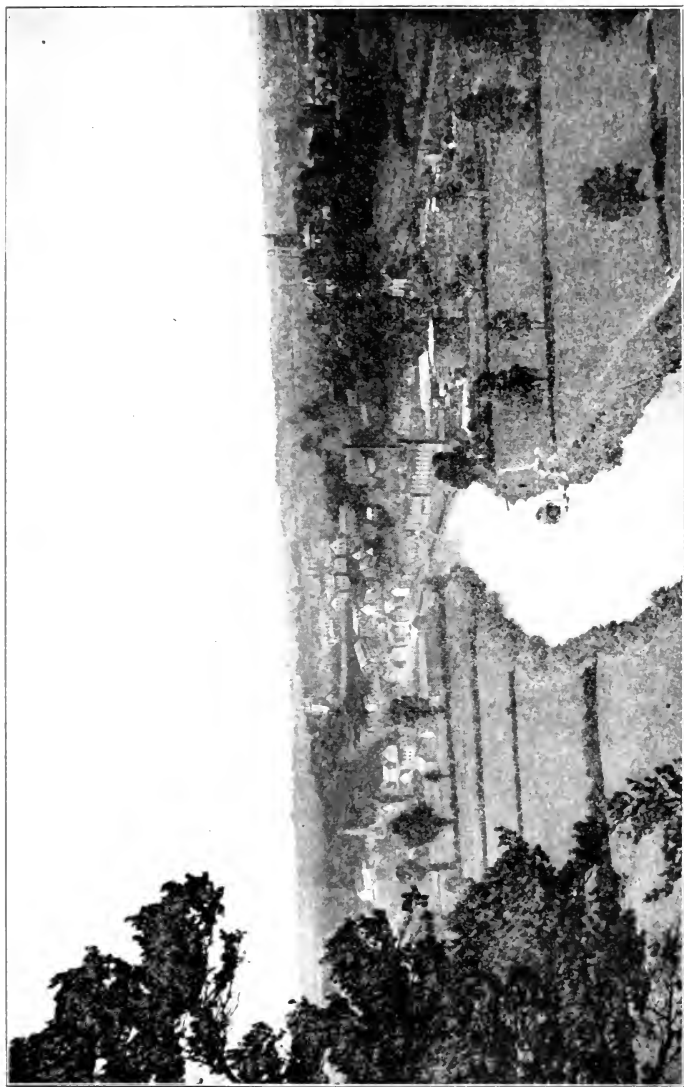
During the fifteenth century English wool was in great demand and brought a good price in the market. This made sheep-raising a profitable enterprise. Men who had land wished to turn it to this use, and those who had money to invest were looking about for land that they might rent.

Demand for sheep land. In order to raise sheep most profitably it is necessary to have very large runs for them to graze over. It was very advantageous also to have those runs fenced in so that fewer shepherds were required to watch the sheep. Before very long all the waste land which could be used for this purpose had been taken up, and the sheep raisers turned greedy eyes upon the manors.

Inclosures. If we recall to mind the organization of the manor we shall see at once that inclosing any part of it meant a complete breakdown of the manor system. On the manor there was no land, with the possible exception of the lord's demesne, which anybody had a right to inclose. The pasture belonged to all in common, and no one could bar his neighbor's sheep and cattle from any part of it. Rights over the arable land were also as much confused. While each villain cultivated his own strips and reaped for his own use the crops they bore, after the harvest was gathered all enjoyed rights of pasture over the whole field.

There were two points at which the manor might be attacked. One was the waste land, which was used exclusively for pasture, and the other was the arable. Against each of these the person wishing to inclose must proceed differently. If the lord wished to inclose the waste of the manor, the courts, which were usually presided over by members of the landholding class, very obligingly decided that his tenants could not prevent it unless some of them had a specific grant of the right to pasture cattle there. With this decision a serious blow was struck at the whole organization. Few tenants could show any written evidence of their right to pasture in the common, and the lord could therefore inclose without more ado.

With the arable land the case was a little different. Anyone wishing to inclose, be he lord or tenant, must first exchange



THE HEDGEROWS OF ENGLAND

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strips with his neighbors until all his land lay in adjoining parcels. If the lord were doing the inclosing, the pasturage right of his tenants over this land after the crops were cut vanished into thin air. If the incloser were a tenant the case was not so simply disposed of. Not until he had obtained the consent of all his partners in the common rights could he fence out their cattle and sheep after harvest time, even from his own fields.

The inclosure of a manor may often have proceeded after this fashion. First, the lord would inclose the waste and rent it out for grazing. With most of their pasture gone the tenants would find it hard to make a living. Pressed by the money payments which they owed their lord, they would sell out their rights in the arable and wander off to become day laborers. The land they left was soon turned over, as the waste had been, to the shepherd and his flock. In this way whole villages disappeared, and the farm lands which had supported them returned to grass and weeds.

Effect of inclosures. Although the inclosure movement did not extend to all parts of England, and in those districts where it did appear not all the manors were inclosed, still it had a very powerful influence on the country. Farming for a living was giving place to farming for profit. Small farms worked by their proprietors were passing away, and large-scale production with hired labor was taking their place.

Effect of inclosures on labor. At first the sheep farms tended to adjust the balance between land and labor which had been upset by the Black Death. Manors which had occupied twenty or thirty men required but two or three shepherds when given over to grazing. Unfortunately, when the scales began to swing they did not stop until they were as far out of level on the side of land as they had been on the side of labor. Landowners no longer saw their land idle for want of tenants and laborers. On the other hand, farmers turned tramps because the land had increased so much in value they could not rent it for any price they could afford to pay. Cotters, who had depended largely on wages for work on other men's land, found it at first difficult and then impossible to get work, because so much less labor was required for

sheep-raising than for farming. The rent of their little cottages and plots fell due, and they had no money to pay. They joined the other families who had been driven from their holdings in a wandering through the country which began with a hunt for work but soon became an aimless tramping about. Some actually died of starvation by the roadside, while others took to begging and stealing for a living. Crime and poverty increased so alarmingly that public-spirited men took up the matter and wrote and spoke in behalf of the farmers. One of these men was Sir Thomas More, who writes as follows in his "Utopia":

Forsooth (quoth I) your sheep, that were wont to be so meek and tame, and so small eaters, now, as I hear say, be become so great devourers, and so wild, that they eat up and swallow down the very men themselves. They consume, destroy, and devour whole fields, houses, and cities. For look in what parts of the realm doth grow the finest, and therefore dearest wool, there noblemen and gentlemen, yea, and certain Abbots, holy men God wot, not contenting themselves with the yearly revenues and profits that were wont to grow to their forefathers and predecessors of their lands, not being content that they live in rest and pleasure, nothing profiting, yea, much annoying the public weal, leave no ground for tillage; they enclose all in pastures; they throw down houses; they pluck down towns; and leave nothing standing but only the church, to make of it a sheephouse. . . . Therefore . . . the husbandmen be thrust out of their own. . . . Away they trudge, I say, out of their known and accustomed houses, finding no place to rest in. All their household stuff, which is very little worth, though it might well abide the sale, yet being suddenly thrust out, they be constrained to sell it for a thing of nought. And when they have, wandering about, soon spent that, what can they else to do but steal and then justly, God wot, be hanged, or else go about begging? And yet then also they be cast in prison as vagabonds, because they go about and work not; whom no man will set awork, though they never so willingly offer themselves thereto. For one shepherd or herd man is enough to eat up that ground with cattle, to the occupying whereof about husbandry many hands were requisite.

At last the government was roused to action. Laws were passed to limit inclosures. These laws were seldom enforced, and it was just as well that they were not, for they were wrong

in principle. A larger production of wool was required by the greater population and the higher standard of living of the time, and under the manor system but little increase in production was possible. These very men who were driven from their lands were needed in industry and shipping. Unfortunately no one helped them to find their places, and many of them were too ignorant to do it for themselves. In time the matter adjusted itself, as such matters do, but in the period of adjustment there was great suffering among the more ignorant of the agricultural classes and a great loss of wealth to the country as a whole.

Foreign commerce of England. By 1492 the foreign commerce of England had sufficiently expanded to furnish employment to most of the landless men who were willing to follow the sea. Goods were being carried to and fro between England and the Continent in English ships instead of those of France, Italy, or the Hanseatic League.

Trading companies. The foreign commerce of England was developed by organizations of merchants known as companies. In some cases these companies seem to have been an outgrowth of the medieval merchant guild of some city; in other cases they were created by the government to take advantage of the commercial opportunities which the geographical discoveries of the period had opened up. The Merchant Adventurers, who did a business in English cloth with the Netherlands and north Germany, was one of the earliest of these companies. The English East India Company was the most famous. Among the others which existed for a longer or shorter time during this period were the Turkey Company, the Muscovy Company (for trade with Russia), the African Company, and the Hudson's Bay Company. These were all chartered by the king or Parliament. In the charter rules were laid down as to how the company should be governed, in what part of the world members could trade, and various other rules which the purpose of the company made desirable. By granting this charter the king forbade all his subjects who were not members of the company to engage in the trade for which this company was formed. For instance, no

Englishman who was not a member of the Turkey Company could trade in Turkey.

Regulated companies. These companies fall into two classes, regulated and joint-stock, according to the way in which they conducted their business. The regulated company was the earlier type, and many of the companies began in this form but became joint-stock companies during the seventeenth century. There is a close similarity between the guild and the regulated company. The guild was a group of men engaged in the same line of business who banded together for mutual protection but continued to carry on their business, each man for himself, under the general rules which governed the guild. In the regulated company each member of the company traded his own goods in his own ships and took his own losses or gains. For safety the ships of all the members frequently sailed together. Factories, or, as we should call them, trading posts, were established at convenient places where merchants could store their goods and find comfortable shelter for themselves. Ambassadors and consuls were maintained in the countries where the company traded, in order to protect the merchants and their property in the courts and to obtain special trading privileges for the company whenever possible. As the practice of the merchant's going with his goods was gradually abandoned, the company maintained in the factories an agent who took charge of the goods sent there, disposed of them, and bought native wares for the return voyage of the fleet.

Joint-stock companies. Such a system had many disadvantages. For instance, members of the company sometimes competed with each other and so lowered prices, and those who had only a small capital were at a disadvantage with the others. To meet these difficulties a group of members frequently put their money together and traded with the joint stock of the group. This had the merit of distributing the gains and losses, so that even if no such large gains were made by anyone as before fell to the lucky, neither did anyone lose heavily. Furthermore, there was no competition among the members. Under the new system people who had not enough capital to send out a ship of their own

could still employ their extra money to advantage. At first the joint stock was arranged for each voyage in the East India Company, and both capital and profits were divided among the subscribers when the fleet returned from India. Such a cumbersome arrangement yielded in a short time to the joint-stock system. By this the original subscriptions to the stock form a permanent fund which is never divided up again. Under the joint-stock system the members of the company left the conduct of their business in the hands of officers whom they chose and of hired agents.

Objections to trading companies. Although most of the commerce of England was in the hands of trading companies during the sixteenth, seventeenth, and eighteenth centuries, there was constant complaint to the king and Parliament against them. This opposition came partly from merchants known as interlopers, who tried to enter the trade in spite of the monopoly which had been granted to the members of the company by the charter. These people claimed that it was their right as English citizens to share in any profitable trade that was open to Englishmen anywhere in the world. Of course they were willing to grant that the government might deny to them or anyone else the right to trade, providing it was for the public good, but they claimed that the companies were not managed for the public good but for private gain. Instead of increasing the commerce of the realm they were really limiting it to the amount that was most profitable to themselves. The manufacturers of English goods complained that the companies were not exporting as much as they might, since they were afraid to carry out too much stuff which they might be unable to sell. It was far safer for them to have too little than too much English cloth to offer abroad. Again, the company imported so little raw silk and other materials needed by the manufacturers that the price was always high and the production of finished goods limited. Occasionally even the consumer raised a feeble voice in protest at the high prices which he was forced to pay for goods imported by these monopolies.

Advantages of companies. In answer to all this criticism the companies made such a good defense that they not only continued to exist under government protection but in some cases were assisted with government funds. In order to understand their position we must remember that the government of England did not afford the protection and help to her merchants abroad which other countries, such as France, were then giving and which all civilized countries at present provide. Little attempt was made to put down piracy in such distant waters as the Mediterranean or the waters about India. Englishmen in Africa, India, or America were expected to defend themselves or die. Myles Standish dealt with the Indians about Plymouth as best he could, and in King Philip's War no material help was given by the home government. It was just the same in India and Africa. It fell to the companies to establish forts at their trading posts and to keep up an armed force sufficient to defend them. In the field of diplomacy as little was done by the government. Indian princes were won over to the side of the English merchant, as against his French or Dutch rival, by the persuasions and gifts of the representatives of the East India Company. When their debtors refused to pay or their goods were stolen, English merchants looked to the consuls and ambassador of the company in Turkey. When interlopers, who paid no share in the expense of forts and consuls, claimed the right to share in the commerce which these forts and consuls made safe for them, it seemed only just to refuse their demand. When they went further and demanded that the government assume the expense of the forts and consuls their demand was less easy to refuse. The government was conservative, and the members of the companies had great political influence, so nothing of this kind was done for some time. When the scheme was given a trial the thing was so badly managed that the cost to the nation was excessive. In Turkey the government consul did not make his appearance until 1803, and India remained in the hands of the company until 1834. Wherever merchants were dealing with partly civilized peoples the chartered company evidently had great advantages. Among the European nations the use of

monopoly was less and the abuse greater. The situation was met in some cases by obliging the companies to throw open their membership to all who paid a small entrance fee and lived up to the regulations of the company after admittance. Of course such an arrangement could only be made for a regulated company, as in the joint-stock company new members could only be admitted when there were shares of stock for sale. The objections of the manufactures were answered with the statement that by limiting the amount exported to the actual needs of the foreign market, the companies did much to steady trade and prevent overproduction. If they had exported more than was needed they would have encouraged manufacturers to produce in larger quantities, the market would have been glutted, prices of English goods would have fallen, and after a short period of great activity the manufacturers would have found their business at a standstill until the overproduction was consumed. If these wise old London money-makers had witnessed the business depressions which have fallen upon all the great manufacturing nations at intervals in the past century, they might have found in these occurrences much to strengthen their arguments. As to the enormous profits which the companies were supposed to make on their goods, investigations showed that the increased price in England as compared to the places from which the goods came was often justified by the heavy expenses which the companies were called upon to bear.

Influence of the companies. In spite of the companies' excellent defense no one could justify the existence of such government-created monopolies under modern conditions. That they served the purpose of greatly extending England's commerce and stimulating her manufactures by providing a much wider market for her manufactured goods no one can deny. Still more important, with but small help from the government at home, these companies established colonies and trading posts which developed into the British Empire of the present day.

Domestic commerce of England. *Importance of domestic commerce.* From a political point of view the foreign commerce of England was of tremendous importance in her history. It

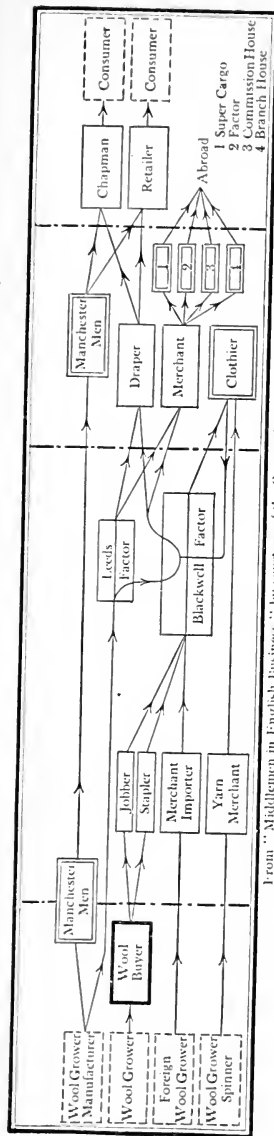
determined her relations with other nations to a large extent and it created the British Empire. On her economic development it had less effect than the domestic commerce which grew up during the mercantile period. In the Middle Ages commodities were largely stationary. Goods were consumed to a very great extent in the places where they were produced. Only a tiny stream of foreign products flowed into England, and the flow between different parts of England was hardly greater. By the beginning of the fifteenth century the general use of money and the capital which merchants had accumulated were giving a fluidity to commerce which, under the intelligent guidance of the middlemen, caused wares to flow freely to any part of England where demand drew them. The government preserved order and provided courts in which the claims of merchants were justly settled. The many small rivers which intersected the country compensated in part for the poor roads. The long seacoast and the good harbors furnished excellent means of communication between some parts of the country. All these conditions enabled domestic commerce to grow to far greater dimensions than those which foreign commerce reached. To this growth the middlemen provided the impulse.

Middlemen. Middlemen are the traders through whose hands commodities pass on their way from the maker to the consumer. In sixteenth-century England the middlemen were as much hated as they are today, and for the same reason. In the eyes of the ignorant they raised the price of the goods they handled without improving the goods in any way that would increase their real value. They did not see that cloth carried from Norwich to London had acquired an added value and should sell for more, just as cloth which had been dyed was worth more than undyed cloth. The merchant had given the cloth place utility. So the merchant who bought wool in the shearing-time in the early summer, and stored it in his warehouse until the spinners needed it in the winter, had given that wool a time value which justified the higher price which he charged. He had in both cases invested his money and kept it tied up for some time; in the first instance he

had provided transportation and in the second warehouse facilities, and in both he had used his intelligence to serve the needs of business. He had hunted out the places where cloth and wool were produced and the place and time where each was needed, and he had met the need.

Many of the services which the middlemen rendered have been taken over by other agencies in modern business life. Advertising in all its forms is an attempt to bring together producer and consumer by spreading a knowledge of goods which are seeking a market. Before the days of billboards and newspapers much of this work was done by the middleman. Today most manufacturers keep up a selling force whose business it is to direct the flow of the products to the best markets. Here again the middleman served the manufacturer two hundred years ago. Mail-order houses and department stores are both selling organizations which leave little need for the middleman in modern business. Before they existed he filled the place which they now occupy.

Middlemen in the wool trade. The place of the middleman will become more apparent if we follow him through one line of trade such as the trade in wool and woolens (see chart). Wool was raised in large quantities on the inclosed sheepwalks and in small quantities on nearly every farm in England. Some wool growers spun and wove their own wool, others spun it only, and still others sold it just as it came from the shearing. Cloth of the first group was sold either to wholesale merchants, who distributed it to retail dealers who kept stores, or to peddlers, known as chapmen, who peddled it through the country. The yarn was bought up by yarn merchants, who sold it to the clothiers. The clothiers were both merchants and manufacturers; in their hands the yarn was manufactured, and the cloth passed from them to the Cloth Market in London at Blackwell Hall. Here it was bought up by the drapers, who sold it to the retail merchants, from whom it reached the consumer. The wool grower sold his wool at shearing-time to wool buyers, who went about the country collecting the fleeces. These men were sometimes agents who bought for some merchant, or men of capital who bought on their



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MIDDLEMEN IN ENGLAND IN THE MERCANTILE PERIOD; WOOL AND WOOLENS

Wool buyer: usually an agent who went about the country at shearing-time and bought up the wool from the farmers.

Jobber or merchant: a man who bought wool in the fleece just as it came from the back of the sheep, either through a buyer or direct, and sold it again just as he bought it. He was a capitalist and had warehouses. The wool harvest lasted one month. The manufacturers wanted a constant supply throughout the year. The jobber regulated the flow of wool from one to the other.

Stapler: a man who bought up fleeces and sorted wool according to its staple. The fleece contains several grades of wool, each one best fitted for one special line of manufacture.

Yarn merchant: a man who bought up yarn spun in the country districts and sold it to the manufacturers of cloth. Sometimes they were staplers also, and put out their wool to be spun.

Clothier: a man who bought wool and delivered it to the spinners in the villages and the country districts. The spinners were paid for their work. The yarn was then carried to a weaver, who was likewise paid by the clothier. The cloth was carried in turn to the fuller, dyer, shearer, dresser, etc.; each of these was paid by the clothier, who superintended the whole.

Blackwell factor: a broker at the London Cloth Market at Blackwell Hall.

Draper: a retail or wholesale dealer in woollen cloth.

Leeds factor: a broker at the cloth fair at Leeds.

Manchester men: wholesale traveling merchants who sold all sorts of wares to shopkeepers and chapmen.

own account to sell again to the jobber or the stapler. The jobber warehoused the wool until an advantageous time to dispose of it to brokers at Blackwell Hall, who in turn sold it to the clothiers. If the wool was sold to a stapler he sorted it according to staple (the length of fiber) and sold each grade of wool through the London market to the manufacturer who used that particular grade in his industry. From the manufacturer (who was usually a clothier) the finished goods went back to the cloth market, then to the draper, and from him to the chapman or the storekeeper. Although the wool trade was the most thoroughly developed of all lines of trade in England, and for this reason more middlemen took part in it than in the other trades, the other trades were organized on very much the same principle.

The domestic system of industry. *Antecedents of the domestic system.* In discussing the production of goods two systems have been dealt with so far: that in which a family group produced for its own consumption—known as the household system—and that under which goods were manufactured by specialists who owned their own tools, usually purchased their own raw material, and sold their goods to the consumer in the shop where they were made. The latter is known as the handicraft system. The first appears when small rural communities are the characteristic organization of society. The Egyptian estate, the Roman villa, and the medieval manor, each called forth this industrial system.

With the rise of cities in which were market places for the exchange of goods between producers of specialties, the craftsman came into being. This was equally true in the cities of ancient Egypt and in Athens, Rome, and the towns of the Middle Ages. Feebly at first, but with increasing strength as time unrolled, the instinct of fellowship and kindred interests drew craftsmen together into guilds. By the Middle Ages these organizations were so powerful that many of the problems which faced skilled artisans could be handled in such a way as to protect the interests of the workers against the forces to which up to this time they had been a prey. Work with the hands had attained a dignity

never known before. Skill of a high order and considerable artistic feeling were attained by these craftsmen.

Each industrial system the result of the market which industry served. Each system of production was adapted to the market which industry was to serve. The craftsmen of a town bound together in guilds served a market which was limited in nine cases out of ten to the town and the immediate countryside. Foreign commerce (and goods entered foreign commerce as soon as they passed outside the boundaries of the town in search of a market) absorbed but a small fraction of the articles produced in any town. For this reason it did not influence production to any extent. With the enlargement of the foreign market and the creation of a national market in the mercantile period a new system of industry came into being. This was known as the domestic system of industry.

The domestic system. The domestic system appeared in many different forms, but certain general characteristics marked it. In the first place, it was given the name "domestic system" because the work was done in the home of the worker and not in a shop open to the public or in a factory managed by the manufacturer. The worker still owned the tools which he employed in his trade, but the material upon which he worked was often furnished by the capitalist, who was frequently both trader and manufacturer. The craftsman no longer came in contact with the consumer. He was dependent upon the capitalist manufacturer for the means of earning a living. The capitalist and not the craftsman took all the risk, hunted up markets, and furnished the managing ability as well as the capital. One phase of the domestic system we have already encountered in the wool trade. The wool growers who spun their own wool and sold it in this partially manufactured form to the yarn merchants were domestic workers. In this case they were working on their own raw material. In the following quotation describing the clothiers of the west of England another form of the domestic system is described. In this case it is to be noted that the clothiers supply the capital throughout.

Having then, raised his wool, or bought it at the Cirencester or London or other markets, or having dispatched broggers into the country to buy, the clothier delivered it out weekly among the spinners who lived in the vicinity of these clothing towns, in the country and the hamlets. The spinners were paid for their work and the yarn was then carried to a weaver, who was likewise paid by the clothier. The yarn dealer sometimes intervened and relieved the clothier of these earlier parts of the business. And so successively through the remaining processes of the manufacture—milling, dyeing, shearing, dressing, etc.—the clothier carried his ware and paid the artisans. He thus employed many distinct classes of artisans and each performed only one operation upon the wool or cloth. The excellence of this system consisted in the concentrated direction of all the process by the clothier under a well-defined division of labor. Its greatest defect was the wastes caused by repeated carriage over considerable distances between successive artisans.—WESTERFIELD, R. B., "Middlemen in English Business, 1660-1760."

Between the spinner or weaver who worked on material doled out to him weekly by the clothier, and the spinner who spun his own wool and sold the yarn at market, there were many different grades of dependence upon the capitalist.

The domestic workers in the country round Halifax described by Defoe in the following quotation are evidently combining some farming with the practice of their craft, as did many of the workers in other country districts.

The land was divided into small Enclosures from two Acres to six or seven each, seldom more, every three or four Pieces of Land had an House belonging to them; . . . hardly an House out of a Speaking-distance from another; . . . we could see at every House a Tenter, and on almost every Tenter a piece of Cloth or Kersie or Shaloon. . . . Every clothier keeps one horse, at least, to carry his Manufactures to the Market; and every one, generally, keeps a Cow or two or more for his family. By this means the small pieces of enclosed Land about each house are occupied, for they scarce sow Corn enough to feed their Poultry. . . . The houses are full of lusty Fellows, some at the Dye-vat, some at the looms, others dressing Cloths; the women and children carding or spinning; being all employed from the youngest to the oldest. . . . Not a beggar to be seen nor a idle person.—DEFOE (about 1725), "Tour," Vol. III, pp. 144-146

The domestic system at the present day. Modern material civilization is like the rock in which we find embedded the fossil remains of the past. There is hardly a form of industrial development the counterpart of which cannot be found somewhere in the world today. Of the domestic system, which is only one step removed from the very latest method of production, the factory system, this is preëminently true. The Russian peasants at the present time carry on weaving, embroidery, and brass work as supplementary to agriculture. In our own large cities many processes in the garment-making industry, the manufacture of artificial flowers, and various other industries are carried on in the homes of the poor. A higher grade of domestic workers supply the specialty shops with such wares as hand-knit sweaters, workbags, lamp shades, and other novelties.

Relation between a national market and the domestic system. That the domestic system of production sprang up in England at a time when a national market was created is a fact that no one can deny. Just why the creation of a national market brought about the domestic system is not so clear unless we bear in mind the condition of manufacturing at the opening of the period. In



ENGLISH WASHING AND BLEACHING GROUND,
A.D. 1500

the first place, England was not a great manufacturing country then. Most of her wealth was still the product of her farms and sheepwalks which was exchanged for foreign-manufactured goods. A great part of the wares used by the people were made in the homes of those who consumed them. Only in the towns was industry specialized to any great extent. And here production was controlled by the guilds. It had always been the policy of the guilds to limit the amount produced so as to keep up the price to what they considered a just return on the money and labor consumed in the production of their wares. And they were bitterly opposed to innovations, even though such reduced the cost of production. As the expanding domestic and foreign commerce of the country created a greater demand for their wares they took advantage to raise prices, but made little effort to supply goods by better methods of production in the quantity in which they were needed. The high prices which prevailed tempted some of the more enlightened manufacturers to increase their output, but the majority of the guild brethren belonged to the conservative party, and the progressive members were prosecuted in the courts for infractions of the guild rules. Here was a serious situation. Merchants had found markets for more goods than were being produced, and they were determined to have the goods to sell. Manufacturers were either unable or unwilling to produce more. Something had to give way. Either commerce must stand still or the manufacturing system of the country must be changed. It was the manufacturing system which went to pieces under the strain. Both manufacturers and merchants were accumulating more capital than they had ever controlled before, and with capital as a weapon they were invincible in a contest with the guild system. In many cases their capital worked for them, to the destruction of the guilds, without any conscious effort on their part. For instance, the dependence of one craft upon another brought about a form of the domestic system even in the cities.

Breaking down of the guild system. One of the fundamental ideas of the guild system was that each craftsman should eventually become a master worker, buy raw material direct from the

producer, and sell his finished product direct to the consumer. A factor which ultimately militated against this was the subdivision of the crafts in the latter part of the Middle Ages. Cloth-making was split up among the weavers, fullers, burelers, dyers, and finishers. If the ideals of the times were to be adhered to, the weavers should buy yarn, weave it into cloth, and expose it for sale. The fullers must buy of the weavers, cleanse and thicken the cloth in their fulling-mills, and in their turn offer it for sale, and so on through the list. According to this arrangement only the craftsmen who were responsible for the last process came in contact with the ultimate consumer, the person who wore the cloth. In a small town cut off from foreign commerce, where the population did not increase perceptibly from generation to generation, a perfect equilibrium might be created in which there would be just as many weavers as were required to keep the fullers, burelers, dyers, and finishers busy and supply the needs of the town. Just as soon as the weavers failed either for want of the ready money or lack of enterprise to buy enough yarn to supply their needs, the equilibrium would be destroyed. One of two things would happen: either the fullers or one of the other groups of craftsmen who possessed the capital and the initiative, and were dependent upon the weavers' supplying them with cloth to continue their own business, would go outside and buy the product on which they worked, or else they would buy yarn and set the weavers to work. There are two ways in which the fullers might set the weavers to work on their wool. First, they might buy looms and set them up in their houses and have the weavers come there to work. This is known as the factory system, and it was adopted only in rare cases until after the invention of machinery at the close of the eighteenth century. The other possibility was to set the weavers to work on the yarn in their own homes or shops. This solution of the problem created the domestic system.

Creation of a class of permanent journeymen. A second feature in the evolution of the guilds which tended to undermine the whole system was the growth of a class of permanent journeymen. In the ideal guild all apprentices would become journeymen, and

all journeymen would become masters. By the beginning of the mercantile period these conditions were by no means universal and were becoming less and less common. To become a master a journeyman must have, in most cases, a goodly sum of money at his disposal. The guilds had raised their entrance fees, and they frequently required, in addition, a masterpiece which contained expensive material and a feast to the guild brothers from the candidate for admission. Such changes were sometimes made with the deliberate purpose of limiting the membership. The masters of the guild were becoming traders who handled goods made by others or manufacturers on a larger scale who did less themselves and depended more on hired labor. It was for their interest to keep the class of journeymen as large as possible so that help might be plentiful and wages low. At the same time, the more they cut down the number of masters, the fewer shops there would be in competition with themselves. Such selfish reasoning was hardly conscious and never outspoken. Other forces were quite as powerful as the greed of gain in raising the cost of setting up as a master. More and more money had come into use. Wealth had increased greatly, and the style of living had become more luxurious. It was quite in accordance with the tendency of the times to expect upon any occasion greater expenditures of the masters. At the same time, it was becoming increasingly difficult for the man without capital to compete successfully with the established masters.

Journeymen become domestic workers. It would seem the natural course of events for the journeymen to find work in the shops of the masters, but as a matter of fact they did not. The reason for this was that the rules and traditions of the crafts were opposed to production on a large scale under one roof. It was customary for journeymen to live in the master's house. Under the old order of things when a man married he was supposed to set up his own home and his own shop at the same time. When the difficulties set in the way of his becoming a master made this no longer possible, he either asked more money in place of board and lived at home, or else he slipped

away to the country, where the guild rules could not reach him, and set to work in a small way for himself. As he had no capital he must, perforce, work on other men's material. In this way he frequently became a domestic worker completely dependent upon the capital of other men. To help out his living he combined a little farming with the practice of his craft. Those who stayed in the city also became domestic masters eventually, after they had passed through the stage of permanent journeymen and as such had influenced guild development.

Journeymen organizations. Under the guild system there could be no conflict between labor and capital, because apprentices and journeymen would not care to combine and fight to win privileges for their own class which would hamper them a few years ahead when they had passed into the class of employers. With the appearance of a class of permanent journeymen all this was changed. In spite of the opposition of the masters, journeymen formed organizations independent of the guilds. Through these clubs they fought for better pay and the exclusion from the shops of the masters of men who were not of their club. In some of the crafts these organizations were brought into the companies of employers, known as the Companies or the Livery Companies, by an agreement which assured them of the advantages for which they had been fighting. An excellent example of this is that of the London blacksmiths given in W. J. Ashley's "Economic History," Part II, p. 117:

The "ordinance, articles, and constitutions," which were "ordained and granted" by "the worshipful masters and wardens with all the whole company of the craft of Blacksmiths of London, to the servants of the said craft," in 1434, have been preserved, owing to the fortunate circumstance that they were placed among the records of one of the ecclesiastical courts of London. These articles are little less than a series of concessions made by the company to "the brotherhood of yeomen." "Every servant shall pay a quarter 2d to his brotherhood, every sister 1d." New members are to pay "for their incoming 2s." A stranger coming to London "to have a service in the craft" is to serve two weeks, apparently on probation, and then "to make his covenant [for] three years," and "to have for

his salary, by year 40s": servants already employed were evidently to have the same rate of wages. "From henceforth, when any stranger cometh to London to have a service, any of the servants [that] knoweth that he will have a service shall bring him to a master to serve, and to warn the warden that is their governor [i.e. of the yeoman] that he may be at the covenant-making."

Rise of small masters from domestic workers. Although the journeymen's organizations were absorbed again into the craft companies, it is clear that some of the points for which they had fought were gained. Partly from their activities and partly through the shifting interests of the traders, some of the obstacles to their becoming masters were removed. As masters their position was still, however, that of domestic workers. Economic conditions prevented them from opening shops and selling their products direct to the consumer. What they and the men under them in their workrooms produced was disposed of to merchants, if the work was not actually done on order from merchant-manufacturers. To reach a national market required more salesmanship and larger capital than the domestic master possessed. The need of salesmanship and capital in the new type of business was having its effect in other quarters also. Some of those who had qualified as masters under the old regulations were lost for want of capital and ability to meet the needs of the conditions, and sank to the level of the small domestic master.

The domestic system brought about by mercantile capital. The domestic system came into existence when one craft became dependent upon another, or one group of workers within a craft became dependent upon another group. In each case independence was lost by want of capital. A third way in which this system came about was by the employment of the capital of merchants, who sent their agents out through the country to pick up cloth and other manufactures which the country people had always made for their own use in their homes. When the farmers and their wives saw that an extra piece of woollen cloth woven in their spare time could be sold for what was to them a good price, they set to work at the next opportunity to make that extra piece.

Extent to which the domestic system was introduced. Although the domestic system of production came into extensive use, it never entirely replaced the handicraft system any more than that had entirely replaced the household system of production. In fact, the three are all found at the present time, although they have all been largely superseded by the factory system. In the cloth-making crafts the domestic system was widely adopted. Certain articles of wood, such as the handles for knives, lathes, and the like, which did not require either expensive tools or great skill, were made in the homes of the farmers. Work requiring greater skill, such as that of the glovers, shoemakers, and metal workers, could be carried on under the domestic system only where trained craftsmen took up this method of production.

Effects of the domestic system. As the fundamental cause for the appearance of the domestic system was the increased demand for English-manufactured goods both in and out of England, we should expect to find that the greatest effect of its introduction was the production of wares in greater quantity. And such was the case. By this system many people that the guilds would not permit to engage in the crafts were occupied in manufacturing. At the same time, goods were produced at less cost. This was due in part to the cheaper labor which was employed and in part to the greater division of labor as the scale of production increased. Under the old system there must be a master to every five or six men; under the new a man of ability could manage a business in which fifty or sixty workers were under his supervision. Complaints were made by the guilds that the quality of goods was very much inferior on account of the employment of workers who had not had the seven years' apprenticeship. Doubtless there was some ground for this complaint, but cheaper goods, even if they were less well made, were in demand, and there seems to us little reason why the demand should not have been satisfied. To the guildsman the production of such wares seemed unfair competition, to be prevented by law, if possible. As the guildsman had opposed all new introductions, we can muster up very little sympathy for him as his wails come to us down

the centuries. One of the great benefits which the domestic system brought in its train was the breaking down of some of the guild prejudices. Up to this time the introduction of any new industry as well as the introduction of new methods had been bitterly fought by the guilds, but now foreigners and others set up silk-weaving, ribbon-making, and many more without regard to the guilds.

The effect of the system upon the accumulation of capital, especially in the hands of manufacturers, was very marked. Under the guild system a few masters had gradually accumulated sufficient capital to inaugurate the new order of things, but once inaugurated, it returned wealth to its founders manifold. Business done on a larger scale, even though each transaction yields less profit, in the aggregate brings in vastly larger returns. Where these returns were hoarded, it was possible for the manufacturer to increase still further the scale on which he was doing business. We shall see how large a part this capital was to play in the next transition which industry was to undergo. At the same time that the industrial capitalist was coming into being, there was growing up at the other end of the ladder a large class of industrial workers who worked all their lives on the goods of other men. They too were destined to play their part in the creation of our modern industrial system.

The effect of the domestic system on the distribution of the population is also interesting. Many towns were rather less populated than they had been under the old order, while suburbs grew at a rapid rate. The population of some of the country districts increased noticeably. A great demand for foodstuffs was created by the lessened food production on the little farms where the farmers found manufacturing lighter and more remunerative work. Lastly, the domestic system helped to complete the overthrow of the guild system and to bring into existence the Livery Companies and other similar organizations.

Livery Companies. Nothing brings out the difference between the medieval period and the mercantile period more clearly than a comparison of the Great Livery Companies and the guilds.

The Livery Companies were the organizations of manufacturers and merchants which corresponded to the guilds. In fact, they were in many instances the direct outgrowth of the guilds. In the guilds the masters had been men who actually worked with their hands, while in the Livery Company the leading men were men of wealth who directed the business in which they were engaged. Some were merchants exclusively. Those who were manufacturers frequently made nothing in their own places of business. Instead they devoted their time to buying raw material, distributing work to domestic workers, and hunting up markets where the products in which they were interested would bring the highest price. Such men were not called masters, as in the guilds, but the Livery. Like the masters, they managed the affairs of the company and chose the officers from their own number. The actual workers—small masters producing on the domestic system—were also members of the companies, but in an inferior grade. They were known as the yeomanry of the company.

Capital. All through the mercantile period capital was becoming more and more important; in fact, it was beginning to occupy the important place which it now holds in commerce and industry. There are two points which one must bear in mind in regard to capital in order fully to understand this period. First one must remember that capital is wealth used to produce more wealth. Gold and silver, wool and hides, are not capital if they are not set to work to make more wealth. And, secondly, the greater use of metallic currency had made it possible for people to get together wealth in a form in which it was easily preserved and easy to use as capital. A farmer could translate his different farm products into one form—gold and silver coins—and with the money rent land and buy sheep on a large scale if wool-raising was the most profitable line of business at the time. In the same way manufacturers could turn their surplus wealth into capital for the most profitable line of production. Capital employed very profitably brought a rapid increase in wealth, which gave still greater capital for the business.

Industrial monopolies. At the present time a man with capital to invest in a manufacturing enterprise can estimate very closely what prices his product will bring and what the cost of production will be. In the mercantile period business men had not worked out scientific methods of making such calculations. To induce men of means to start new industries which would benefit the country, the sovereign or Parliament frequently granted industrial monopolies. An industrial monopoly granted to an individual or a company gave that individual or that company the exclusive right to manufacture that article. The company was then able to charge enough to make a profit, no matter how high its expenses might run. A monopoly was granted for the manufacture of guns and gunpowder to secure the country against danger of being cut off from their European supply in case of war, and another for the manufacture of window glass, which had not previously been made in England. One for the manufacture of salt by a new method suggests our patents granted on new inventions. Another was granted for the manufacture of white soap, others for the manufacture of saltpeter, ovens, starch, etc.

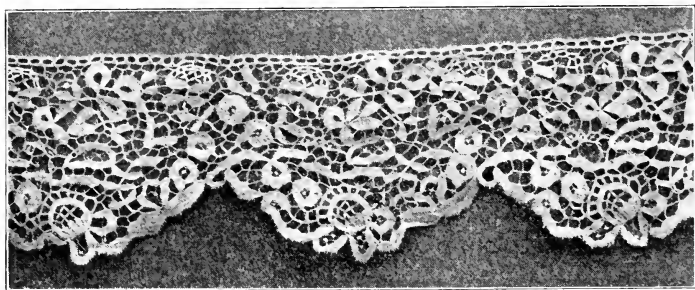
Effects of monopolies. While monopolies hastened the introduction of new industries they also did much harm. Some industries would have been started on a larger scale if everyone had been free to engage in these lines of manufacture. Possessors of monopolies raised the prices of their wares beyond all reason, and the consumers complained bitterly. In response to their complaints the government promised not to grant any more, but the temptation was too great for some of the kings. They granted monopolies to their favorites for love and to other people for money, and gave up the practice entirely only when Parliament took the control of such matters out of their hands.

Government regulation of industry under Elizabeth. Regulation of industry by the national government was characteristic of the entire mercantile period. The reign of Elizabeth, 1558-1603, shows this regulation at its height in England. By the time Queen Elizabeth came to the throne it was clear to the statesmen of the

period that the inclosures had broken up the agricultural organization which had existed during the Middle Ages, and it was just as clear that the use of capital and other changed conditions were rapidly breaking down the guild organization of the handicrafts. The guilds and the town governments were no longer able to control production to any extent, because manufacturing had moved out of the towns into the country to avoid control. Many complaints were pouring in to the government in regard to the existing conditions. Some of these complaints were simply the outcry of people who were opposed to all change, but some were justified. The working people objected that while the price of everything was going up very fast their wages were not being advanced. Manufacturers and merchants complained that in the villages craftsmen were allowed to take apprentices for two or three years instead of seven years, as the guilds required in the towns, and for this reason half-trained workers were sending out poorly made goods. Labor was restless and unsettled, and both employers and employees were making too many changes. There was a strong tendency among the farming class to leave the land and go into manufacturing. This disturbed the landowners because it became difficult to obtain labor at harvest or planting time. To the government this seemed a very serious matter because it threatened the food supply of the country.

Statute of Apprentices, 1563. To meet these needs Parliament in 1563 passed a law known as the Statute of Apprentices. By this law the justices of the peace were ordered to fix wages in each district, and when they had once settled this matter for the year no one was allowed by law to pay more or less than the wages fixed. In determining the wages the justices were to call into council with them such persons in the district as could give them advice on the matter. No doubt the idea was that the justices should bring together the workers and the employers of their district on a fair basis, very much as a board of conciliation does at the present time. As the justices belonged to the employer class wages did not rise as fast as they should, and the discontent

of the wage earners was not satisfied. The law required a seven years' apprenticeship for all craftsmen in order that they might be thoroughly trained. To bring a more settled condition to labor, all workers must make contracts by the year. If an employer discharged a man, or a worker left before the year was up, he was subject to punishment. At busy seasons of the year all men of certain classes could be drafted to work on farms. This act also fixed the hours of labor. In the summer, everywhere except in London, work was to begin at five in the



Courtesy of the Metropolitan Museum of Art

HONITON LACE

morning and last to six or eight at night. In the winter it was to last from dawn to dark. There was time out for meals, so that the day was not as long as it seems at first. No doubt it was the working day generally accepted when the law was passed.

Although this law was not repealed until 1813, it was very poorly enforced almost from the first, so that we have no way of knowing what the effect of such regulation would be. The law is very important to students of history as showing how far government regulation was taking the place of local regulation.

Foreign artisans. The government reached out in another direction to aid industry. During most of the mercantile period England was the only great Protestant country in Europe. From France, Spain, and their dependencies many Protestants came to England. These immigrants were given a royal permit to settle in certain districts, on the understanding that they would establish

there the industries for which they were famous. In this way the culture of the silkworm and the manufacture of silk were introduced into England. Many woolen textiles which English craftsmen had not been skilled in making were produced by these foreign workmen. The manufacture of paper was also started



COTTAGES OF THE MERCANTILE PERIOD, WARWICK, ENGLAND

by these foreigners, and the making of Honiton lace was introduced into Devon. All this helped to lift England to a prominent place as a manufacturing country.

Manufactures of England in the mercantile period. *Industries in the Middle Ages.* In the Middle Ages, as we have seen, the great mass of the manufactured goods used by the people was made in their own households and consumed where they were manufactured. Such goods did not enter trade to any extent until the mercantile period, when, under the domestic system, people began to manufacture in their homes with the purpose of selling. The homemade goods were very simple, even rough, for the most part. Here and there a peasant industry would develop



Courtesy of the Metropolitan Museum of Art

FRENCH TAPESTRY WORKED FROM A DESIGN BY THE ARTIST
BOUCHER

Compare this with the French medieval tapestry on page 118. Which design is better suited to the material in which it is executed?

artistic beauty, but this was the exception rather than the rule. Almost all the beautiful wares of the time were the work of highly trained craftsmen who were specialists. Their work was very excellent in both design and execution and was in some cases distributed to all parts of the known world. Their wares were produced on a very limited scale and were so expensive that they were to be possessed only by kings, princes, and a few of the wealthy nobles.

Effect of the Renaissance on the crafts.

With the beginning of the Renaissance in Italy in 1300 a change came over the crafts of that country which gradually spread to the rest of Europe and reached England at the opening of the mercantile period. The greater arts—painting, architecture, and sculpture—began to separate from the lesser arts, or crafts.

For instance, a craftsman trained to make painted linen chests became more interested in painting a beautiful picture on the chest than in creating a chest that was beautiful as a piece of furniture. When he discovered where his talent lay he would turn to painting



Courtesy of the Metropolitan Museum of Art

ITALIAN RENAISSANCE ARMOR, 1560

Compare with the Italian armor of a century earlier on page 161

pictures on the walls of churches and palaces instead of painting chests. The making of things he would leave to those of less artistic ability, though he might now and then paint a panel for the top of a chest that someone else was constructing, or he might sketch a design for a chest-maker to use. The result of this was that the designs for armor, tapestry, furniture, and jewelry became more elaborate and sometimes very much more beautiful. Sometimes these designs were very poorly suited for the material in which they were worked out. Shields were made by the armorers which looked more like pieces of bas-relief than a useful defense in battle. Tapestries designed by the great Italian painters were worked up to look almost exactly like paintings. They were very beautiful indeed, but they had lost the charm of the earlier tapestry, which did not pretend to be anything but what it was. Before the mercantile period ended an overelaborate style of ornamentation had grown up in Italy which was far removed from the early beauty of her arts and crafts.

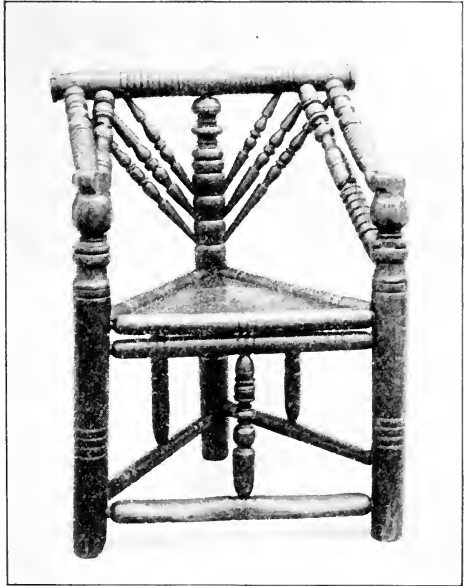
Backwardness of England at the opening of the mercantile period. At the opening of the mercantile period England was still very backward in manufacturing, as she had been during the Middle Ages. She depended upon Italy, France, Germany, and the Low Countries for much of her finer wares. When fine wood-carving was to be done it was necessary, even as late as the seventeenth century, to send to Italy for skilled craftsmen.

Conditions favoring manufacturing development in the mercantile period. During the mercantile period a great advance was made in manufacturing. This was due in part to factors which we have already considered. The creation of a national government, the increase in foreign and domestic trade, the general use of money, the accumulation of capital, and the immigration of foreign workmen had all given a great impulse to the manufacturing of fine goods in England. There were other factors which were quite as important. By 1492 England had given up all thought of conquering France, and the civil war known as the War of the Roses was over. Except for a comparatively brief civil war in the seventeenth century, there were no battles worth

mentioning fought on English soil. And the part that England played in European wars up to the time the period closed was comparatively small. The order and peace which England enjoyed at home made possible greater wealth than her people had before possessed. And with wealth and the cessation of fighting came a desire for the comforts of life. Beds with mattresses and feather pillows took the place of a bundle of straw on the floor. Window glass was used by the well-to-do in place of oiled paper in the windows. Instead of the gloomy, fortress-like stone castles like the castle of Langeais (page 174) the nobles were beginning to put up the pleasant brick and stone country houses, with an abundance of window space, which are still to be seen in many parts of Eng-

land today. Better clothes, better food, better furniture, and better household implements were enjoyed by all classes of society.

New industries. In response to the demand for finer goods and a larger variety of wares new industries sprang up. Some of these have been mentioned, such as the making of paper and window glass, as industries which were encouraged by grant of a monopoly. Others were the manufacture of brick, carved-stone and wood chimney pieces, fine cloth, silk and cotton goods,



Courtesy of the Metropolitan Museum of Art

ENGLISH CHAIR OF THE LATE SIXTEENTH CENTURY

lace, starch, fine pottery, and furniture. Some of these industries were carried on by craftsmen in their shops, and some under the domestic system. A few craftsmen's shops had blossomed out into small factories. To follow in detail the development of any one of these industries is a most fascinating study, but one which would require more space than can be devoted to it here.



Courtesy of the Metropolitan Museum of Art

JACOBEOAN CHAIR OF THE LATE SEVENTEENTH CENTURY

To give a full account of all of them would require volumes. Before we leave the subject, however, let us glance at two industries and at one famous man in each industry who played an important part in its development.

Furniture: Chippendale. During the sixteenth and seventeenth centuries much of the fine furniture was made of oak. Chairs, beds, chests, and sideboards were massive in their proportions in order to permit of the heavy carving which gave them their chief claim to beauty. In the

eighteenth century a cabinetmaker named Thomas Chippendale originated a new type of furniture, which was called Chippendale after him. A great deal of this furniture was made of mahogany, which had just been discovered and introduced into Europe from Spanish America. Spanish mahogany, as it was then called, possessed certain advantages over oak and the other woods which had been used up to this time. In the first place, it

turned a beautiful color as it aged. In the second place, it took a high polish, and it was so strong that slender chair legs and table legs were sufficient to support a heavy weight. Where softer woods broke when one tried to carve out of them delicate, thin leaves, flowers, or other designs, the toughness of the mahogany stood the strain with perfect ease.

With this excellent material at his command Chippendale manufactured in his shop a light, graceful, and beautifully decorated



Courtesy of the Metropolitan Museum of Art

CHIPPENDALE CHAIR, 1760-1780



Courtesy of the Metropolitan Museum of Art

CHIPPENDALE CHAIR, 1760-1780

type of furniture which is still being imitated in England and America. Although he borrowed many of his designs from the Gothic, the French, and the Chinese, he gave to all his borrowings a charm quite his own. The proportions of his pieces were good, and the carving, which was his favorite form of ornament, was rich in the extreme but never overdone.

Chippendale not only manufactured beautiful furniture, he also made it fashionable. In his shop the fashion of London gathered to see what new pieces he had to show. Where the fashionable people go their imitators follow, and the things they admire are

talked about. Chippendale could find no better advertising than that given him by the gallants and dames who idled about his shop and gossiped and admired. His business grew so that he took in several buildings and employed a considerable force of cabinetmakers to carry out the designs which he created. From

a craftsman he had become a capitalist manufacturer and a designer.

Chippendale was followed by several more famous furniture designers. The Adam brothers, Hepplewhite, and Sheraton were the most famous of these. Each of them developed a distinct style of furniture, of which the illustrations give us some idea. The Adam furniture is sometimes painted, and many of the designs were adapted from the Italian. The Sheraton pieces are often decorated with inlay in different-colored woods.



Courtesy of the Metropolitan Museum of Art

HEPPLEWHITE CHAIR OF THE EIGHTEENTH
CENTURY

Pottery. Pottery-making was a primitive industry which sprang up all over the world in very early times wherever clay was to be found. In many parts of England it continued to be a household industry among the country people, but it did not develop into a skilled craft until the mercantile period. The home-made bowls and pitchers of the Middle Ages were not unlike those

produced by the American Indians except that they were glazed. The glaze was produced by sprinkling the ware with powdered lead ore just before it was fired. This produced a shiny surface and made the ware water-tight. These rude and inelegant dishes were not highly prized, first, because they were not beautiful and, secondly, because they were easily broken. Until 1700 most people of small means used largely dishes of wood or of pewter, while the wealthy used pewter, silver, and gold dishes or such imported wares as Venetian glass, German stoneware, delftware, or oriental porcelain.

In a district known as the Potteries, in Staffordshire, was one of those localities where many a farmer had a kiln in a shed behind his little cottage in which he made jugs and bowls for himself and sometimes for his neighbors. The district was rich in clay pits, where anyone might dig the coarse clay for the body of the jar or the finer clay for the slip, or thin surface covering. Coal, too, could be dug by the potter in a number of different spots in the neighborhood. Only the lead ore needed for the glaze had to be brought from a distance. Under such favorable conditions the pottery industry was sure to advance as soon as there was a market for the potter's wares. By the seventeenth century the potters were making quaint little jugs with pictures on them which found something of a market in the neighborhood. About 1690 two Dutchmen named David and John Elers came to Staffordshire and introduced the salt glaze and various other improvements in pottery-making. English ware was now able to enter the London market in competition with the German and Dutch imported ware. Potters gave up their farming to devote themselves exclusively to their trade. Agents to attend to their London business had to be provided, and to meet the cost of this the potters were obliged to produce on a larger scale. First, they enlarged their kilns and employed workmen to help them. When the kilns had reached such a size that they could not profitably be made any larger, their number of kilns was increased. By 1743 two partners were running a tile factory with as many as five ovens, an extensive plant for the time.

Wedgwood. The most famous of the Staffordshire potters was Josiah Wedgwood, who was born in 1730. He came of a family of potters, and when very young was apprenticed to learn the potter's trade. Besides being a thoroughly trained craftsman he was a student (especially along scientific lines), an excellent business man, and an artist.

After considerable experimenting Wedgwood worked up two distinct types of ware, both of them finer than anything that had been produced in England up to his time. One was a cream-colored ware on which he had pictures painted. A very famous set of this kind was made for the Empress of Russia. This set was decorated with a series of views of famous English country houses. The second type of ware was that with which we now most generally connect the name of Wedgwood. This is a jasper of gray or blue or some other solid color on which are placed figures and conventional designs in white. The decoration is raised and suggests sculptured marble bas-relief with a colored background.

As Wedgwood's ware attained popularity his works had to be enlarged to meet the demand. With larger groups of workmen it was evident to a man of Wedgwood's intelligence that a division of labor was the most profitable organization. He so arranged it that every man was given a particular part of the work to do, and by the constant doing of one thing he became very skillful. Special designers were employed to draw designs for the jars and for the very beautiful decorations which they were to carry—among them the well-known artist Flaxman; and the actual manufacture was subdivided among different groups of workmen. A large manufacturing establishment organized on this plan is a factory whether we have machinery used or not. Although the general introduction of the factory system belongs to the period of the Industrial Revolution, it is well to remember that the factory was not unknown in the closing years of the mercantile period.

In many other industries the same general development was taking place which we have traced in the pottery industry, with this difference, that only in a few cases was the factory system

introduced. In most instances the domestic system of production or the small-shop handicraft system continued to hold the field. The total result was that very fine goods of many different kinds were being made in England and in such quantity that large classes of the people were enjoying them. Not only the



Courtesy of the Metropolitan Museum of Art

WEDGWOOD. (LATE EIGHTEENTH CENTURY)

landed aristocracy but also the merchants and the manufacturers were able to have fine clothes and fine furniture. Even the well-to-do farmers were living in a degree of comfort unknown to all but kings and princes in the Middle Ages. As yet, however, the laboring class were still supplying their own wants in their own households to a very large extent. Everything continued to be made by hand, and the hand labor of the skilled craftsman was far beyond the power of the worker to purchase.

TOPICS FOR DISCUSSION

1. Look up the effect of the Renaissance on art, literature, and learning.
2. Look up the discoveries of the fifteenth and sixteenth centuries.
3. Compare the English trading companies with the Calimala of Florence; with a modern company such as the Standard Oil Company.
4. Mention two or more industries in your town which are carried on under the domestic system.
5. What was the effect upon English manufacturers of the creation of a strong national government?
6. Compare the domestic market of an English manufacturer with that of a Florentine manufacturer; with an American manufacturer of the present time.
7. Why did the guilds break down in the mercantile period?
8. Did the inclosures do more harm than good?
9. Visit a museum or a store and find pieces of furniture in the style of Chippendale, Adam, Hepplewhite, and Sheraton, and some Wedgwood dishes. Compare them with modern American pieces. Is there anything in the way the two are manufactured to account for the differences which you find?
10. How was wealth used in the mercantile period?
11. In what respects were industry and commerce more advanced in the mercantile period than in the Roman Empire? What advantages have twentieth-century industry and commerce over those of the mercantile period?

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CHAPTER X

AGRICULTURAL CHANGES OF THE SEVENTEENTH AND EIGHTEENTH CENTURIES

During the mercantile period, while England was entering on a world commerce and a new industrial era, agriculture was not standing still. The population of the country was growing more rapidly than ever before, and the increase in population was creating a greater demand for food. To meet this demand it was necessary either that foodstuffs be imported in quantity or that more be raised in England. The former solution of the problem was out of the question because of the high cost of freight for bulky and perishable articles. To raise more in England, on the other hand, if improved farming methods were introduced, was very easy. This is plain when we recall how wasteful and inefficient were the methods of the medieval farmers—methods which were still in vogue over all the country until the seventeenth century.

Medieval farming. The open-field system, which bound every man of the farming partnership to plant the same crops as his neighbors and to allow his sheep and cattle to run with the rest in the manor, was in itself an extravagant arrangement. The village was often a mile or two from some parts of the fields, and this distance the farmers must walk at the beginning and end of a day of hard physical labor. Paths were worn across the fields, thereby reducing the cultivated area, and the balks which divided one man's strips from those of his neighbors increased this loss.

Almost the only crops grown were wheat, rye, barley, beans, and peas, which were not suited to every soil. The crops were planted by throwing the seed broadcast over the fields, which had been previously plowed with a clumsy plow and harrowed. When the seeds came up the weeds came up with them, and it was

a struggle between the weeds and the wheat as to which would live. In this struggle the farmer remained an impartial outsider. He made no attempt to stir up the ground so that water and air might reach the roots of his grain. Much of the seed that sprang up was choked to death, and the rest bore but sparingly. At the same time the earth was being rapidly exhausted of those elements which are needed for the production of grain, and less and less was produced in the overworked fields. Partly to meet this difficulty some arable land was allowed to lie fallow each year. Although this enabled it to recover somewhat, here again was a loss which might be ended.

Instead of using the manure of cattle to improve their land, the medieval farmers dried it and burned it for fuel. In the raising of cattle and sheep the waste from antiquated methods was greater. All the sheep and cattle of the village ran together on the commons. There were often more animals than the commons could properly feed, and any diseases which started in the flock were spread widely. Many animals died, and those which survived were a starved and bony crew.

Slow improvement in farming conditions explained. Although farming conditions were so poor, changes came very slowly indeed. The roads were exceedingly bad, and for this reason many villages were almost entirely cut off from those about. Improvements made in one place were often unknown to farmers only a few miles away. Poor roads also hindered the transportation of goods to market and so forced the farmer to sell in his immediate neighborhood what he had raised, no matter how low the price. It was no wonder that he contented himself with producing enough for his own wants.

Several changes in the system of landholding had taken place in the rural districts at the beginning of the mercantile period. Money rents and money wages had taken the place of services and payments in kind. By this change men were encouraged to work more energetically because the fruit of their labor was their own to enjoy. Unfortunately this change had been accompanied by a second, which more than balanced the advantages of

the first. Many lords had ceased to farm their own lands and had rented their domains to others. In this way the very class which was most likely to introduce new ideas and had power to force changes was withdrawn from rural life. At the same time the desire of the lords to get as much money out of their lands as possible induced them to raise the rents of their land. Laws passed by Parliament, which was made up largely of landholders, enabled them to take from their tenants their rights in the land, and tenants found themselves liable to be put out of their farms if they were not willing to pay the higher rates. If a man made any improvements on his holding, his lord was very likely to raise the rent, because he was sure of finding another tenant who was willing to pay more for it now that it was improved. The result was that any man who improved his land was likely to lose it, while the tenant who let his run down could keep it as long as he wished. A third change had been brought about by the inclosures for sheep-raising, which we have discussed in detail. These inclosures were the first serious attempt to manage land with a view to a profit obtained from sales in distant markets rather than to supply the immediate needs of the owner or his neighbors. Sheep inclosures increased the rents and made it more difficult for an incompetent farmer, or one who was attempting to work poor land, to make enough to pay his rent. At the same time, by encouraging the inclosing movement, they led to inclosures for farming which were of great advantage to a progressive farmer.

Dawn of a new day. Before the seventeenth century opened, there were signs of the dawn of a new day. In the time of Queen Elizabeth it had become a fad with the nobility to cultivate flowers. Into these flower gardens they sometimes introduced such curiosities as potatoes and turnips, and from their interest in gardening they turned their attention to farming problems. This was a very important step, because such men traveled in Holland, Germany, and France, where they saw new crops and new methods of farming which they introduced in England. Books began to be written about farming and were eagerly read by the few who were interested. Fitzherbert in 1523, Tusser in 1557,

and Googe in 1577, writing on farming, all found readers. Fitzherbert and Tusser did little more than write down the practices then in favor, but Googe, whose work was largely a translation of a German work, advocated the planting of turnips as food for sheep and cattle, and he describes a reaping machine of a rough sort. This movement had less effect on agriculture than one would expect, for the few progressive landowners were not imitated to any extent, and such valuable advice as writers had to give went unheeded.

Progress of the seventeenth century in ideas. From 1600 to 1700 the ideas of educated men showed a great advance over anything that had gone before. Travel on the Continent, information brought home by explorers in the New World, and the perusal of the works of the Romans on farming, all did their part in the awakening which took place. Writers of the century advocate the use of lighter plows, with steel blades made on such lines that they will cut deeper and at the same time require only one or two horses to draw them in place of the six or eight horses or oxen which were employed with the clumsy wooden plows in general use. Land should be made more productive by spreading on it the manure of sheep and cattle, bones, seaweed, marl, and ashes. If the land turned sour, lime should be spread. Sea sand was recommended for heavy soils. Instead of trying to plant grain and beans and peas on all land, whether it was suited to it or not, farmers were urged to raise flax (for the manufacture of linen cloth), licorice, weld (for dyeing bright yellow), saffron, and hemp; these would find a ready market with the manufacturers of the country, who were obliged to rely on a supply imported at great expense. Turnips and clover should be raised as food for the live stock in the winter, and it was possible to employ the fallow for these crops, as they improved instead of injuring the land for the grain crop. The open-field system was considered an insuperable barrier to progress and it was urged that inclosures be carried out everywhere. Unfortunately it was next to impossible to introduce new crops and new methods as long as the consent of all the village was necessary to any change. What

is more, all parts of a great field were not equally suited to any one crop. The pasturing in common came in for its share of criticism. It was maintained that healthier and better-fed cattle and sheep could be raised on an inclosed pasture than on the commons.

Progress of the seventeenth century in fact. In actual practice far less was accomplished than the theorists advocated. This was due to the strange mixture of sense and nonsense which many of the books on farming contained. One writer says that oxen may be cured of the colic by beholding geese or ducks in the water. Turnips are recommended not only as food for live stock but also as an ingredient for bread and as supplying good cider and oil. It is hardly strange that practical farmers laughed at such extravagances and put the work containing them aside as worthless. It was not until practical men tried out these theories and proved the value of those which possessed value that any great advance was made along these lines. In one direction considerable progress was made. Hundreds of acres in the fens had been drained and reclaimed. Although part of this land was put under water again by the fen men who cut the dikes during the disorder of the civil war, some remained. Such reclaimed land was always inclosed from the start, and some inclosures were made in other parts of the country. Altogether conditions were ripe for the great change which the succeeding century was to show.

Agricultural revolution of the eighteenth century. *Leaders.* Four names stand out among the many who contributed to the development of agriculture during this period: Jethro Tull, the experimenter and writer; Lord Townshend, the capitalist landlord who tested out on a large scale the new methods of caring for land; Robert Bakewell, the founder of scientific sheep and cattle breeding; and Arthur Young, who, by his writings and his talks and the organizations which he started, served to advertise the new methods far and wide. We will take up the work of each of these in turn.

Jethro Tull (1674-1740), the son of a well-to-do landowner, was given the liberal education of the day. He attended Oxford

for a time, devoted some time to music, studied law, and made a tour of Europe. At twenty-five he married and settled down as a gentleman farmer. At first the workmen on the place went on farming according to the traditional methods. As Tull became interested in the management of his fields he began to experiment with new crops and new ways of planting. He learned that by carefully selecting the best seed to plant and hand planting it at a certain depth in rows, not too close together, he obtained the largest yield. When he asked his laborers to plant the seed in this way, they struck. Tull then turned his attention to inventing a machine which would make a hole of the desired depth, drop the seed, and cover it with earth. In working out this problem he was aided by his knowledge of the mechanism of the organ. The result of his efforts was the first drill which was of practical use. Although the drill which he invented was soon superseded by better tools of the kind, the principles of planting which he taught—sowing seed in rows at a certain depth and thinly instead of scattering it broadcast—form the very foundations of modern farming.

A second principle which Tull insisted upon was that of constantly cultivating the ground. It was not enough in his estimation to plow up the earth before planting; all during the summer, while the plants were growing, the weeds should be kept out and the ground constantly stirred so that as the roots reached out they would draw food and water easily from the loosened earth. It was possible to hoe the crops by hand, but it was far more economical of time and effort to run a horse-drawn plow down between the rows, and this was the method which Tull advocated. How successful he was the following quotation from Prothero will show: "Without fallows or manure, he grew on the same land, by constant tillage, for thirteen years in succession heavier wheat crops, from one-third the quantity of seed, than his neighbors could produce by following the accepted routine."

New crops. From the first Tull employed new crops, such as sainfoin (a forage plant which answers the same purpose as clover and grows better in some soils) and turnips; both served

to provide food for live stock and at the same time improved the land for a wheat crop later.

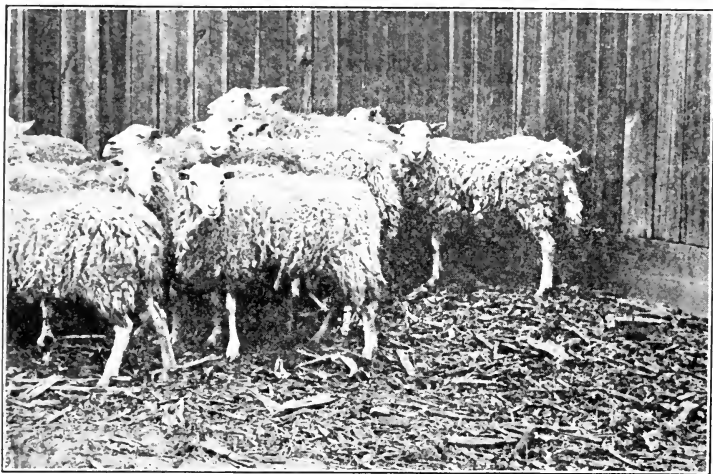
In 1733 Tull published "The Horse-hoeing Husbandry," in which he embodied the results of his experiments. This book became the handbook of progressive farmers and landlords, and many of its teachings have not been outgrown. To it is due much of the progress which shortly made England the most advanced agricultural nation in the world.

Tull had done the great work of discovering and giving to the world the fundamental principles of successful farming; it remained for Lord Townshend to prove to other landlords the immense value of these principles when applied to their estates. About the time that Tull's book was published Lord Townshend retired to his estates and began experimenting to make them more profitable. The task before him must have looked almost a hopeless one when we read that "his land mainly consisted of rush-grown marshes, or sandy wastes where a few sheep starved and two rabbits struggled for every blade of grass." He began by spreading marl on his sandy land. Then he planted turnips on the land, drilling them and horse-hoeing them according to Tull's system. The sheep were allowed to eat some of the turnips in the field where they grew. Such parts as they did not eat were plowed into the field and made it richer than it was before. Some of the turnips fed to the cattle and sheep during the winter enabled the farmers to keep more live stock than before. This meant more farmyard manure to spread on the fields, which were able to produce more, and so the magic circle went on. Townshend advocated the culture of turnips so earnestly that he became known as "Turnip Townshend." He did not confine himself to turnips, however. When his sandy wastes became fertile enough he began to plant wheat in rotation with roots and artificial grasses. This was the four-course system of cropping. Wheat one year was followed by turnips the second, wheat the third, and sainfoin or clover the fourth, and then the rotation began over again.

Remarkable success crowned Townshend's efforts. The value of one farm on his estate rose from \$900 to \$4000, another from

\$90 to \$1120. Some of the farmers on his estates were said to be worth as much as \$50,000.

Unlike Tull and Townshend, Robert Bakewell (born 1725) did not have the advantage of an unusual education or foreign travel. He was a practical farmer and all his life kept to the simple ways in which he was brought up. When only twenty years old he began his experiments in stock-breeding. He bought

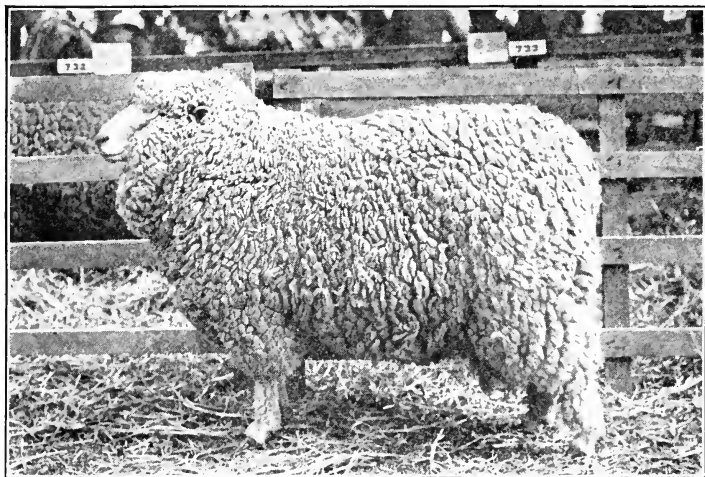


THE TYPE OF SHEEP FOUND IN ENGLAND BEFORE 'ROBERT BAKEWELL
BEGAN HIS WORK

up the best sheep in the neighborhood, and from the descendants of these he kept for breeding purposes those which possessed the characteristics which he desired—small bones, compact form, and a tendency to fatten and to mature early. Unhealthy sheep, those which were slow to develop, or those which ran to bone instead of meat were weeded out of the flock. As a result Bakewell developed a breed that was ready for market in two years instead of four, thrived where other sheep pined, and gave many pounds more meat when slaughtered. These sheep were called the New Leicesters. Their fame spread so that he was able to dispose of members of his flock for very large sums to those

who wished to raise this variety. In one year he received \$15,000 from this source alone. People from all parts of the world came to visit him. It is said that "in his kitchen he entertained Russian princes, French and German royal dukes, British peers, and sightseers of every degree."

Where Bakewell led, other men followed. Breeds of sheep were developed for wool production, cattle for meat and milk,



IMPROVED SHEEP

Note the increase in meat and in wool as compared with the unimproved sheep. See page 235

horses for either draft or speed. The average weight of cattle and sheep at Smithfield Market before and after Bakewell had done his work tells the story :

1710, average weight : beeves, 370 lb. ; calves, 50 lb. ; sheep, 28 lb. ; lambs, 18 lb.

1795, average weight : beeves, 800 lb. ; calves, 148 lb. ; sheep, 80 lb. ; lambs, 50 lb.

Although Tull, Townshend, and Bakewell had demonstrated beyond possibility of doubt the advantages of the new methods of

farming over the old, there were still many in England who had never heard of them. Agricultural magazines were unknown, and newspapers were few and small and had but a limited circulation. Above all things the movement needed advertising, and in Arthur Young it found an excellent publicity man. Young (1741-1820), the son of a minister who was also a landowner on a small scale, early developed a taste for writing. Before he was nineteen he had written four novels. After running a magazine for a short time he married and settled down to farming. From his farming he never made a living; he was too fond of trying experiments and too unpractical in money matters to make a financial success in any line of business. As a writer, however, he was a great success. From novels he turned his attention to writing books and pamphlets on farming. In 1770 he wrote up a tour which he had taken through part of England and Wales in which he describes with much care the condition of agriculture in the country through which he passed. This work was followed by others, which dealt with the other parts of England, Ireland, and France. The last-named is his most famous work, as it was written in the early days of the French Revolution and gives more vividly and accurately than any other record which we possess the actual conditions at the outbreak of that catastrophe. Before this Young had started in 1784 a monthly magazine called *Annals of Agriculture*, which he continued to issue until 1809. Although many different people contributed to this publication, a fourth of all it contained was written by Young himself.

In 1793 the government established a board of agriculture of which Young was made secretary. This board appointed commissioners to make a survey of the agricultural condition of England, and six of these surveys were made by Young.

In addition to his journeyings and his extensive writings Young found time to establish farmers' clubs, plowing matches, and agricultural societies, all of which served to spread the new ideas on farming in which he so heartily believed. Largely through his untiring efforts the advances made by isolated districts here and there were disseminated throughout England, and the whole level

of farming throughout the country was raised. When Young died in 1820 he left an England which bore a very different face from the England in which he was born seventy-nine years before.

The results of the work of Tull, Townshend, Bakewell, and Young were, in the main, highly beneficial. Larger crops were won from the same fields with no more labor than in former times. From 1700 to 1800 the population of England doubled, and the farmers were able to produce sufficient food to take care of the increase and, in addition, to raise grain for export. This was accomplished while a larger and larger proportion of the men of the country were devoting themselves to manufacturing. What is more, the food supply was of a better quality. Wheat bread, which in former times had been for the wealthy only, was now the food for half the population. Salt pork and beef had yielded to fresh meat, which was to be had at all seasons of the year. Vegetables—especially potatoes—were finding their place in the diet of the more intelligent. To the owner of landed estates times were good because under the new methods his farm was yielding him more returns. Even the farmer who rented land found himself better off because he was able to make, above the increased rent, a better living than formerly. The laborer received good wages, and his money bought better food at the same price as formerly. Only the small renter was worse off; he had no capital with which to buy new-style plows or drills, and tradition and ignorance prevented his adopting the new ways which were bringing prosperity to his neighbors. His fields produced no more than in the past, the price he received was no higher, and his rent had risen. In addition to all this, in some cases where inclosures had been carried out, he had lost his pasture rights. Under such conditions the small farmer frequently gave up his farm and became the hired workman of someone who had the intelligence to make better use of the work of his hands than he could himself, or he turned to industry and, by combining some handicraft with his farming, patched out a living.

As the century closed, two events occurred which put the agricultural organization of England to the supreme test. These

were the Industrial Revolution and the Napoleonic wars. When we have studied the Industrial Revolution we shall be better fitted to comprehend the changes which agriculture underwent in the years that followed 1800.

TOPICS FOR DISCUSSION

1. Why were better farming methods necessary in the England of the mercantile period?
2. Why have these improved methods spread very little in Russia?
3. Imagine that the agricultural revolution had never taken place. What would be the condition of this country today?
4. Mention some changes in farming methods in the past half-century which have carried the agricultural revolution still farther.

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CHAPTER XI

PORTUGAL AND SPAIN, THE LOW COUNTRIES, FRANCE, GERMANY, AND ITALY IN THE MER- CANTILE PERIOD

Portugal. The career of Portugal in the mercantile period was very much like the career of a rocket. She flashed into first place commercially with her discovery of an all-water route to the East, and almost as rapidly sank into obscurity. For a few years after 1497, when Vasco da Gama sailed from Lisbon to the coast of India, practically all the Eastern goods to reach European markets passed through the hands of the Portuguese. Each year the fleets left Lisbon for the East, and each year they returned with the wares which were so highly prized. From Venice, so long the market of the world, English, Dutch, French, and German merchants flocked to Lisbon to buy. For a few brief years Portugal was the greatest commercial nation in Europe. Before the century was over the Dutch, French, and English found their way round the Cape of Good Hope to the shores of India, and Portugal lost the monopoly which she had enjoyed. She might still have retained a profitable trade if she had not been united to Spain in 1580 and suffered from the same stupid policy which ruined the industrial and commercial prosperity of that country.

Spain. In the year 1492 two important events occurred in the history of Spain. The rulers of the country, Ferdinand and Isabella, conquered the last Moorish stronghold in the country—the city of Granada—and so completed the unification of the country, and in the same year Columbus carried the Spanish flag to America. The effect of the first event was to put Spain in the ranks of the great European nations, and of the second to found for her the greatest colonial empire which the world had ever seen. In the course of the next fifty years she rose to first place

in Europe as a political power. Her ruler from 1556-1598 was Philip II, who inherited not only Spain and the colonies but parts of Italy and Germany and the seventeen provinces of the Low Countries.

The effect of the Spanish colonies upon Spanish industry, commerce, and political development was even greater than the effect of the union, under one crown, of the many states into which Spain had been divided. The land which the Spanish seized in the New World was rich in gold and silver mines and was inhabited by a race of Indians sufficiently intelligent and docile to furnish the labor for working those mines. A steady stream of gold and silver flowed into Spain from the colonies; some of this went into the pockets of the Spanish nobles who had helped to conquer the country, and some of it went into the treasury of the king. With so much wealth at their disposal king and nobles demanded fine wares in abundance, and industries sprang up to supply the demand. Under the Moors industry had flourished. Some remnants had survived the wars in which they were overthrown, and these were fanned into new life. The manufacture of woolen cloths doubled and tripled. The manufacture of fine Spanish leather, velvets, silks, and wines all rose to importance. The wants that the Spanish manufacturer was unable to supply, the Spanish merchant filled by trade with foreign countries. In fact, trade and industry grew so rapidly that Spain bade fair to be as great industrially and commercially as she was politically. Unfortunately for her there were evil forces at work which brought about her complete downfall.

The Christian population of Spain fell largely into two classes: the peasants, who tilled the soil, and the nobles, who devoted themselves to war and government administration. Both classes scorned manufacturing and trading. The middle-class business men of the country—merchants and manufacturers—were mostly Jews and Moors, and it was in the hands of these men that the prosperity of the land rested, for without them there was no one to organize and direct the manufacturing and trading enterprises for which conditions were ready. In the early seventeenth century

the Jews and Moors were driven from the country. This was one of the most serious blows that could be struck at the prosperity of the land.

Autocracy maintaining medieval point of view. Although the expulsion of the Jews and Moors was the worst blow which the government struck at commerce and industry, it was not the only one. In fact, almost every law passed to regulate business played its part in the destruction. Spain was governed by an autocratic monarch whose only advisers were the princes and great landowners of the country. Such people, no matter how good their intentions, knew very little of the new business methods which marked the period. They were still thinking as their ancestors had thought in the Middle Ages, because they were still living on their great estates very much as their ancestors had lived. In the midst of a world that was rapidly becoming modern they were still mediævally minded. Now it is just as difficult to dress up a man in the clothes of a boy as to impose mediæval restrictions upon the commerce of the mercantile period. Either the man will be choked to death or the seams of the clothing will burst. In the case of Spain the man choked to death. After industry and commerce had been strangled, the Spanish government tried to revive it by making a new set of laws better suited to the new conditions; but then it was too late, and Spain remains today what she was before the period of her greatness—a backward country industrially and commercially, importing manufactured goods in the ships of other nations and exporting raw materials.

It is worth while to notice some of the regulations by which the Spanish government did to death the commerce and industry of the country. First of all, the king taxed both industry and commerce very heavily. This made it difficult for the merchants and manufacturers to accumulate the necessary capital to expand their business to meet the new conditions. Sometimes the taxes were so high that no one could afford to buy the goods of the merchant at the price which gave him a profit, and he was driven out of business entirely. Sometimes the laws were not enforced against

some people, while they were against others, and this drove all but the favored few into bankruptcy. In the foreign commerce of the country special privileges were granted to foreigners, and this forced the Spanish merchants to the wall. In the commerce with the colonies the government ran a government monopoly. No merchants were allowed to trade on their own account; all goods must be sent by the government fleet, which was scheduled to sail every year. Unfortunately the fleet did not sail according to schedule, and the merchants sometimes found, when they finally reached the colonies, that Dutch and English smugglers had supplied the demand and there was nothing for them to do but take their goods home again or sell them for a song. Exports from Spain were taxed according to bulk instead of according to value. The result of this was that the bulky but comparatively inexpensive goods which Spain herself produced, such as leather, cloth, and wines, had to pay such a large export tax that they could not be exported profitably, and the industries which produced these goods languished and finally died.

The object of the king in laying these taxes and making these regulations was to collect large sums of money to spend on wars and royal display. The result of his clumsy and stupid methods was to give him a revenue which grew less every year. In fact, he soon killed the goose that laid the golden egg; from being the richest country in Europe in the sixteenth century Spain became in the eighteenth century one of the poorest.

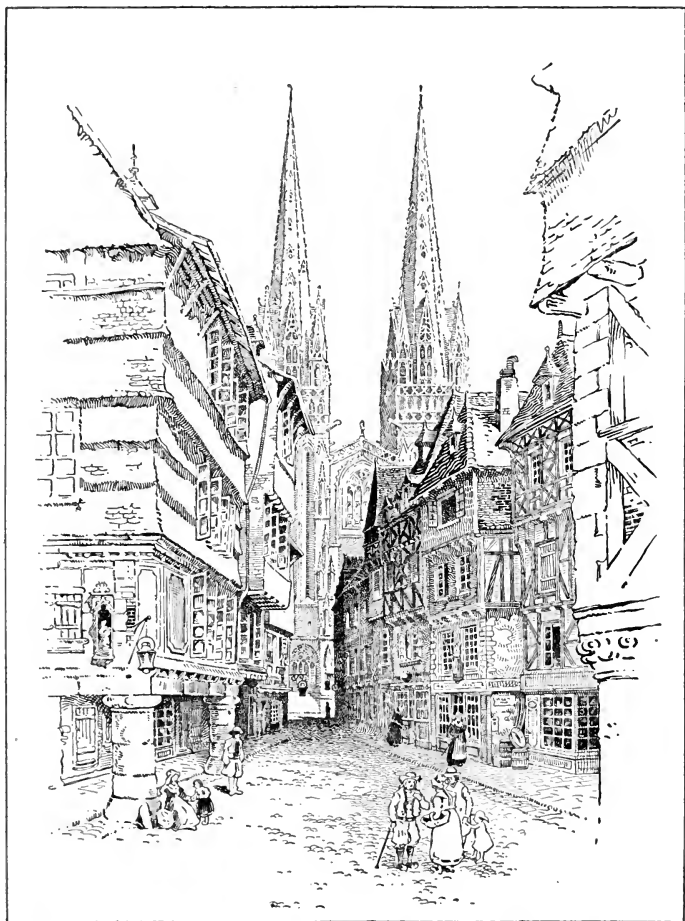
The Low Countries. *Political history.* Very soon after the opening of the mercantile period the Low Countries, consisting of the seventeen provinces of the Netherlands, came into the possession of the Spanish king. At first they were left pretty much to themselves as long as they made generous contributions to the royal treasury. This they were in a position to do without much effort because they were exceedingly prosperous. Philip II was not content with this state of affairs. He was determined to crush all opponents of the Catholic Church here as well as in Spain. He was also determined to make himself as thoroughly autocrat in his provinces as at home. The southern provinces,

which were largely Catholic, succumbed, but the northern provinces resisted. Unfortunately for Philip's dream he had to do with a people as determined to retain their rights of self-government as the Americans in 1776 or the English in 1642, and as obstinate in religious matters as in political. A fierce war ensued in which the Dutch won their independence.

Rise of Dutch commerce. By the time the war was over the Dutch had obtained first place in commerce among the European nations. Their success was due in part to their greater efficiency as sailors and in part to their ability to handle business. From early times the fishing industry had been the chief occupation of a large number of the men of the northern provinces. From their struggles to make a living on the sea, the Dutch had learned to sail a boat in a wind that would drive a Spaniard to port for safety. The Dutchman made his voyages in less time, partly because of his greater skill and partly on account of the excellence of the craft which he built. More than that, he sailed with scarcely more than half the crew required on the ships of the same size built and handled by other nations. All this enabled the Dutch to carry goods for lower freight rates and still make more profit than their rivals. If there had been no men with big enough vision of what trade might be to organize trade on a large scale, buy in the lowest markets, and sell in the highest, the Dutch would have been merely freight carriers for others. As it was, they took full advantage of their opportunities.

First, the trade of the Baltic, which had belonged to the Hanseatic merchants, came into their hands. Then they began to distribute to northern Europe the Eastern goods which they obtained at Venice. When the Eastern trade shifted to Lisbon they were in a still better position to handle this business, as Lisbon was much nearer Antwerp and Amsterdam than Venice. In 1591 Philip II closed the port of Lisbon against them. Upon this they went directly to Java, Ceylon, India, and even Japan with their fleets. Wherever they met the Portuguese they fought them and soon drove them out of many of their trading posts. At convenient locations they established factories, or trading posts, which grew

into the Dutch Colonial Empire. From the East they brought home pepper, mace, nutmeg, cinnamon, raw silk, cotton and silk



A FRENCH TOWN IN THE MERCANTILE PERIOD

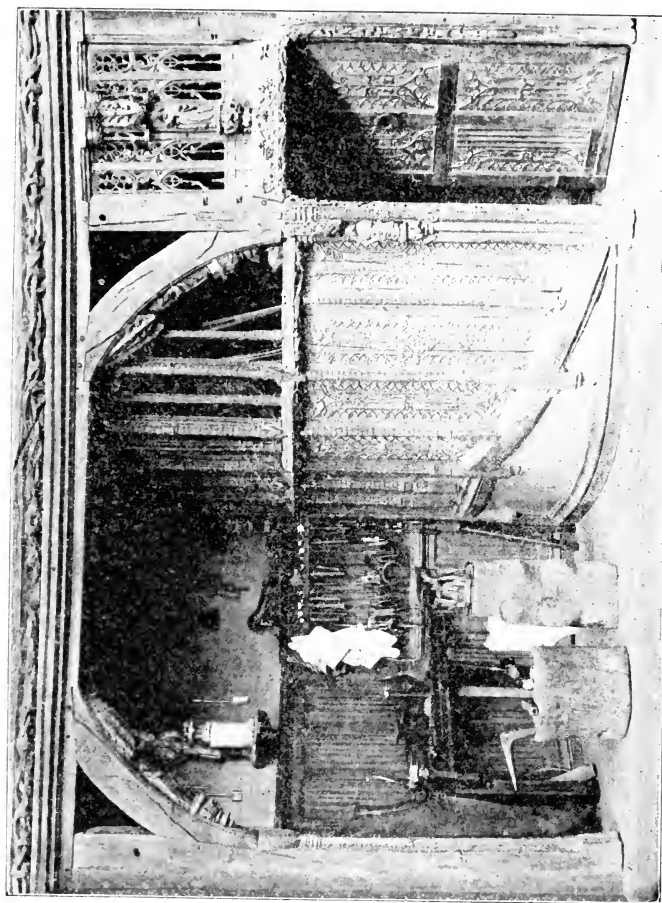
textiles, sugar, coffee, and tea. Such things were to be bought for almost nothing in the places where they were raised, but they still commanded enormous prices in Europe. The profits which

came into the hands of the Dutch merchants from this trade furnished capital for many other enterprises.

Manufacturing was increased by the abundance of capital and the extensive market opened to Dutch goods through the commerce of the country. Banking developed very greatly, and speculation in the stock of the various companies which were financed by the Dutch was very common.

In 1651 the English began to attack Dutch commerce with their navigation laws. These were intended to prevent the Dutch from bringing goods not of their own manufacture to England or taking English goods to other countries than Holland. Of course the purpose back of all this was to hand over this carrying trade to the English merchant even though he charged the consumer higher rates for his services. Restrictions of this kind led to wars between the two countries. As Holland was much the smaller and poorer in natural resources and as, at the same time, she was frequently at war with her strong neighbors on the Continent, she finally lost out. By the eighteenth century she had sunk into a secondary place. Her rival, England, had attained first place in Europe both as a trading and as a manufacturing country.

France in the mercantile period. *Condition of France at the opening of the mercantile period.* At the opening of the mercantile period France was just recovering from the Hundred Years' War with England. As this war was fought on French soil, it prevented the French from advancing industrially as much as they would under normal conditions. France had so much in her favor that the recovery of her industries was very rapid. The industrial skill which had been developed in the Middle Ages was soon revived. When settled conditions offered a market for the luxuries,—fine wines, beautiful tapestries, silks, fine cloths, gloves, elaborate furniture, and all the other goods for which the French had been famous,—such things began to be made again in quantity. France was one of the largest countries of the time, and her fertile soil, her excellent and varied climate, and her other natural resources made it possible for her people to produce wealth with less effort than was required of any other people in western Europe. Her



Courtesy of the Metropolitan Museum of Art

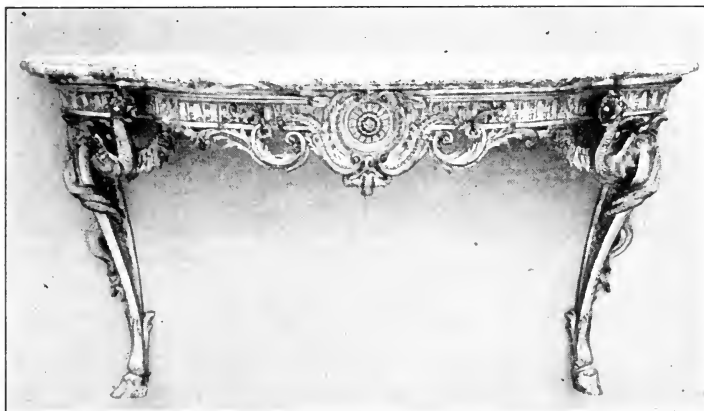
A FRENCH ARMORER'S SHOP IN THE EARLY SIXTEENTH CENTURY

population was also greater than that of any of her neighbors, and she was possessed of a strong government. In spite of these advantages—well-established industries, natural resources, large population, and a competent government—France never attained first place industrially and commercially among the nations of Europe. Outstripped during the first of the period by Portugal, Spain, and then Holland, she was surpassed in the eighteenth century by England. We shall find the causes for this failure in the political history of the country.

Form of government. In the first place, the form of government in France resembled that of Spain. The country was ruled by a king who could not be called to account by his people. His chief advisers were the bishops and nobles. Now and then he called to his aid a business man who understood business problems, but such a man seldom held the favor of the king long against the princes of Church and State. When things got too bad, and a large party was roused to action, their only remedy was to take up arms against their ruler. The civil wars to which France was a prey explain in part her failure.

The mercantile system. Like all other governments of the time, the French government attempted to regulate commerce and industry so as to increase the wealth and power of the country. As the people who drew up these laws had no first-hand knowledge of business, the laws usually did more harm than good and sometimes choked to death the industries they were intended to foster. For instance, the French government regulated the width, the method of manufacture, and the method of dyeing all the cloth manufactured in the country. This was intended to establish a reputation for French cloth so that it would sell readily all over the world. If a planter in Virginia or a Russian prince ordered French cloth of a certain kind, he would receive goods of the same quality that was sent him ten years before. In a day when no one could afford to return unsatisfactory wares because of the high freights, there was an excuse for such measures that does not exist today. Unfortunately the restrictions were so complicated that manufacturers were constantly breaking them without knowing

it until the inspectors came and destroyed the goods which they had made. Some of the regulations were so ignorantly framed that they forced people to give up industries which were profitably established. And they made no allowance for change of fashion; a new style of fabric could not be introduced without a royal decree. Commerce was also hampered by countless restrictions which were aimed to give advantages to French merchants,



Courtesy of the Metropolitan Museum of Art

CONSOLE, OR WALL TABLE, OF THE PERIOD OF LOUIS XIV (1643-1715)

The marble top and the gilded legs and frame illustrate the gorgeousness which marked the reign of this monarch

but which resulted in tying their hands so that they were forced to sit idly by and watch their neighbors carrying off their trade.

National market not developed. With all the government meddling with business, the king failed to do one of the big things which a strong central control should have accomplished. Instead of uniting his country into a single whole for production and consumption, he allowed France to remain split up into a large number of partially independent provinces. Many of these little states had the right of taxing all goods crossing their frontiers. Goods carried from one part of France to another paid a duty every time it crossed the boundary of a state. For instance,

silk might have to pay six or eight different duties in going from the place where it was manufactured to Paris or Rouen, where it was to be sold. Sometimes there was a shortage of food in one part of the country, while grain was so cheap in another part that it did not pay the farmer to cut it, and yet it could not be taken where it was in demand because the duties would make it so



Courtesy of the Metropolitan Museum of Art

CONSOLE OF THE PERIOD OF LOUIS XV

Notice the weak effect produced by the overelaborate design

expensive that no one could afford to buy it. Under such conditions there was little chance for large industries to grow up in any one place, because it would be almost impossible to market the product. Most industries must remain small and content themselves with a local market as in the Middle Ages.

Too powerful guilds. Just as the provinces were allowed to impede commerce, so the guilds were allowed to hold back industry. Government regulations of industry, instead of displacing guild regulations, as in England, were simply added to them. The guilds continued to enjoy the right to control industry in a thousand harmful ways. Like most organizations the guilds

stood for things as they were. They opposed all inventions. If a man contrived a machine which would make production cheaper, he was called upon by the guild to destroy it at once. If someone discovered a new and better way of making something, he was obliged to go back to the old way as soon as his guild brothers discovered his deviation from the beaten path. Instead of improving their craft, two guilds often fought each other for years over their respective rights. And from this intolerable state of things there was no escape. Anyone who had tried to establish himself in the country out of the reach of the guilds would soon have felt the arm of the law. In thoroughly governed France there could arise no domestic system of production.

Religious persecutions. Like Spain, France was a strongly Catholic country during most of the mercantile period. Several religious wars were fought between the Catholic and the Protestant parties. This had a very bad effect upon the industries of the country, as do all wars, and especially civil wars. In the end the Catholic party won a decided victory, and many of the Protestants left the country. These French Protestants, or Huguenots, as they are called, went to Holland, Germany, England, and the English colonies in America. As many of them were merchants, manufacturers, and highly trained craftsmen, they brought a rich contribution of knowledge to their adopted countries. Nearly a hundred thousand Huguenots are supposed to have settled in England, and to them is traced the rise of lace-making, silk manufacture, and several other industries in that country. By the immigration of the Huguenots, France lost all that England gained.

Unwise foreign policy. In their colonial policy the rulers of France were most unwise. When the New World was discovered, two or three French explorers came to America, but the government gave them little encouragement. French kings were more interested in attempts to obtain bits of territory along their borders or some small Italian principality than a part in the vast but unknown lands which Columbus's discovery had opened up. When they finally entered the race for a colonial empire in America and India, they repeated all the mistakes which they were making at

home. Every detail of life was regulated by the government in Paris. The Huguenots, who were unwelcome in France, were equally unwelcome in Canada. Industry and commerce could be carried on in the colonies only as the princes about the king saw fit. At times the home government sent money and soldiers to



Courtesy of the Metropolitan Museum of Art

CONSOLE OF THE PERIOD OF LOUIS XVI

The less ornate design of this console is in keeping with the movement toward greater simplicity which marked this period

aid the colonies, and at other times they turned a deaf ear to the most earnest appeals for help from overseas. French merchants who had invested in colonial ventures saw themselves ruined by the government's inconsistent policy, and turned in disgust from all attempts to build up French commerce. As a result the French manufacturer lost the colonial market for his goods, which would have enabled him to expand his business, and this served to retard the development which ought to have taken place in French industry.

French conditions contrasted with English. The conditions surrounding commerce and industry in England and France during the mercantile period differed very much, it is evident. France entered the period with a greater variety of industries and with her industries better developed. She had greater natural resources and she was admirably situated for foreign trade, as she had ports on both the Atlantic and the Mediterranean. Although she possessed a strong national government which attempted to regulate commerce far more thoroughly than that of England, the local divisions which so seriously hampered economic progress were not abolished as in England. No truly national market was created for French industries. Guilds retained their ancient powers to obstruct progress. As a result of the two foregoing causes the domestic system never arose in France. At the close of the period she was far behind her ancient rival in industry, commerce, and colonial empire.

Industries. In spite of her shortcomings France maintained herself in certain lines. No amount of business ability on the part of the English could give them the leadership in those industries where the artistic sense was the greatest factor of success. France's contact with Italy served to stimulate still further the arts and crafts. French silks held their place in spite of all competition; French laces, French tapestries, and French furniture were sought the world over; and then, as now, France set the fashion in dress.

Germany and Italy during the mercantile period. Political conditions. Germany and Italy shared the same fate during the mercantile period. Both were far in advance of the countries of northern Europe in the Middle Ages, but both fell victims to poor government at the very time when a strong, well-centralized government was essential to success. In both countries a large number of small states sprang up. None of these states were powerful enough to give adequate protection to their merchants or to build up a colonial empire. At the same time almost all of them were governed as stupidly, from an economic point of view, as France or Spain. Industries could not develop to large-scale production because the home market was very small, and

foreign markets were shut against them by more powerful nations. For instance, the English, as soon as they were strong enough, drove the Hanseatic merchants out of the country. In the old days the League would have made war on England and forced the government to readmit them; now the English king, backed by a united people and a full treasury, was far more powerful than the League. Civil wars over religious questions rent the people of Germany, and continual quarrels between the states into which the two countries were divided discouraged both merchant and manufacturer.

Effect of the discoveries. The discovery of the New World and the all-water route to India hastened the downfall of Germany and Italy. The new route to India enabled the Portuguese merchants to sell Eastern wares on the quays at Lisbon for much less than they cost the Venetian merchants to import. Venice was transformed from the most active trade center in Europe to a painted city beside a painted ocean. It still remained a beautiful thing to look upon, but the commerce which was its life blood was fast ebbing away. The trade route from Venice through Germany to the Baltic and North Seas became as dead a thing as Venice itself. And with the decline of trade, industries declined too. By the close of the period both countries were hopelessly behind France, the Netherlands, and England.

TOPICS FOR DISCUSSION

1. Why did no other European country develop as great a commerce as England?
2. Look up the Dutch war for independence from Spain. How far were the causes of this war economic?
3. Look up Antwerp in the mercantile period and compare it with New York at the present time as a commercial and financial center.
4. If you instead of Philip II had been the ruler of Spain, what would have been your policy toward Holland? the American colonies? commerce and manufactures?
5. Look up the three French monarchs, Louis XIV, Louis XV, and Louis XVI. How does each of the three consoles illustrated above express the characteristics of the king in whose reign it was made?

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CHAPTER XII

THE INDUSTRIAL REVOLUTION

Slow development from the earliest times to A.D. 1770. From the beginning of human development to the latter part of the eighteenth century, industry had been jogging along at a very leisurely pace. Improvements had been introduced, it is true, but one had followed another only after a considerable interval. At first progress had been so slow that ten thousand years showed little advance. As time went on the pace quickened. Prehistoric Greek pottery of 2000 B.C. is distinctly superior to that made in 3000 B.C. By the beginning of the Christian Era each century shows an improvement over the preceding century, except during the period of the barbarian invasions. When we come to the mercantile period far-reaching changes are taking place even more rapidly than in the Middle Ages. In 1770, however, a series of changes began which entirely transformed every element of industry and created a material world more unlike the world of 1700 than the world of 1700 was unlike the world of the Prehistoric Greeks. Great cities sprang up overnight. Factories belching smoke took the place of the quiet flocks of sheep on the hillsides. The lumbering coach and the slow-sailing ship gave place to the locomotive and the ocean liner which ply their way swiftly and regularly and bind the industries of the whole world together. With astonishing rapidity the wealth of the world was increased. More clothes, more furniture, more food per capita existed than ever before. Although at first much of this wealth went into the hands of men who were clever enough to seize upon the opportunities which the new conditions presented, it eventually improved the living conditions of all the people. Today the day laborer enjoys comforts which kings did not possess a century and a half ago. These changes were due to the inventions and

discoveries and industrial changes which we group together under the name of the "Industrial Revolution."

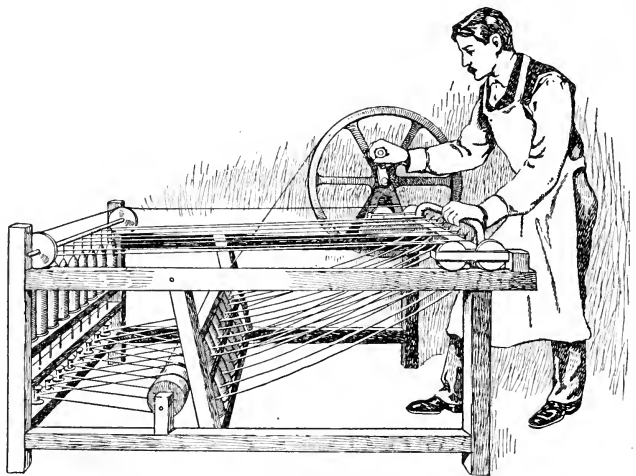
The Industrial Revolution. On the face of things the Industrial Revolution was the change from making goods by hand to making them by machine, the use of artificial power to drive the machines, and the growth of the factory system of production. The unskilled worker tending a machine took the place of the highly trained craftsman guiding with utmost skill his simple tool. Water wheels and steam engines furnished the power to drive the machines and so took the burden from man's muscles. The great factory, with its thousands of workers and its enormous production, replaced the craftsman's shop with its little group of journeymen and apprentices and its limited output, or the domestic worker's home-conducted industry. The capitalist became richer than ever, and the craftsman lost all independence and became a wage worker.

Beneath the surface of things lay greater changes than were presented to the eye. The direction of a mighty force in life had been shifted into new channels. The intelligence of mankind had been turned upon the solution of the everyday problems of human existence. All down the ages thinkers had devoted their powers to philosophy, religion, or art. Now they applied them to such humble matters as the spinning of a thread or the pumping of water from a mine. Although the first spinning machine was shortly superseded by a better one, the great change which that invention typified has continued with increasing power down the century and a half since that first machine was made.

When human intelligence of a high order was devoted to solving the problems of industry the effect was as great and as subtle as the cause which produced it. Human power was greatly enhanced. The steam engine multiplies man's strength a thousand-fold; the spinning machine, by its perfect adjustment to the task to be performed, multiplies his speed and increases his skill many times over. What the steam engine when applied to transportation has done for us may be seen by the following figures: if every man, woman, and child in the United States carried five

hundred pounds a distance of thirty-two miles every day it would equal what the railroads of the country carry, and yet this freight is now handled by the labor of less than one person in fifty.

Revolution in the textile industry. In eighteenth-century England the textile industry was of the utmost importance. Large numbers of the population were engaged in some branch of it, and the products of this industry entered very largely into the



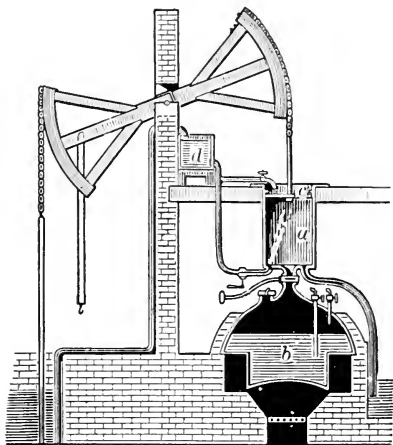
THE FIRST SPINNING JENNY

foreign commerce of the country. It is hardly strange, then, that the problems of this industry should have been the first to be affected. The first change occurred in 1767, when Hargreaves invented the spinning jenny. Up to that time thread had been spun very slowly and laboriously by the use of the spinning wheel or, still more slowly, with the primitive spindle. Hargreaves's spinning jenny was a little more than an enlarged spinning wheel which spun eight threads instead of one. It was so heavy to run that a man was required to operate it. In spite of this disadvantage it was no small gain to multiply by eight the amount of thread produced by one person in a given time. In 1768 this

invention was followed by Arkwright's water frame. This machine was arranged to run by water power, but it did not produce as firm and fine a thread as the spinning jenny. In 1779 Crompton combined the spinning jenny and the water frame into what was called the mule. This machine spun a thread which was both fine and strong. It was so much more satisfactory that it soon replaced very generally the earlier types of spinning machines. The number of spindles on a power-driven machine was increased to a hundred, to two hundred, until on modern machines there are a thousand spindles, and a thousand threads are spun more rapidly and more evenly than one was spun on the ancient spinning wheel.

The steam engine. In 1769 James Watt patented his first steam engine. There had been steam engines made before this; in fact, for hundreds of years students of physics had known that there was in the steam

which rose from boiling water a push or power which might be set to work. As we watch a bubbling teakettle and see the cover lifted by the force of the steam, we may easily imagine how the thought came to them. If this steam could push up that cover, it could push up something else that people wanted pushed up. For a long time the men who attempted to harness steam to man's



NEWCOMEN'S STEAM ENGINE OF 1704

The cylinder *a* was filled with steam rising from the boiler *b*. The steam pushed up the piston *c*. When the piston reached the top of the cylinder the steam was turned off and cold water turned in from *d*. This condensed the steam, formed a vacuum, and the pressure of the air drove the piston down. Watt covered both ends of the cylinder and turned the steam into it, first above and then below the piston

uses made such a clumsy business of it that their inventions were of very little use, but when James Watt attacked the problem he succeeded where they had failed. From the time of his first invention the way was opened for great industrial progress.

Importance of the steam engine. The importance of the steam engine lies in this: the new machinery was much too heavy to be worked by hand or foot power. It was necessary, therefore, to locate factories near such streams as were suitable for furnishing water power. Frequently these streams were far from towns, in places where labor was very difficult to obtain and where the main roads, canals, and other transportation facilities were not readily accessible. The invention of a practical steam engine changed all this. Factories could be built at seaports or near large towns. So long as it was possible to obtain coal to keep the engines going, all was well; the new inventions were freed from a handicap which had held them back. Most important of all, the steam engine when applied to means of transportation produced the steamboat and the locomotive.

Other inventions in the textile industry. The invention of spinning machinery and the steam engine was followed very shortly by the invention of the power loom. For some reason the loom was not generally adopted until after 1815. For more than a generation cloth of machine-made thread was woven on the hand loom. Bleaching cloth by means of chemicals, printing a pattern on it by the use of rollers, cleaning cotton with Whitney's gin, carding cotton and wool by mechanical means, all followed in due time and created the manufacturing conditions in the textile industry with which we are familiar.

The factory system. The Industrial Revolution did not consist of the invention of machinery alone; a very important feature of it was the introduction of the factory system. During the early eighteenth century some few factories had been established. Cloth merchants had gathered as many as a hundred hand looms under one roof and hired a hundred men to run them. This system had made little headway, and most of the manufacturing was carried on under the domestic system or in the shops of the craftsmen.

With the invention of machinery a tremendous impetus was given to the factory movement. It was impossible for the domestic worker to buy a mule and set it up in his cottage; he had not the money to pay for it or the space to set it up. Consequently the machines were bought by capitalists and tended by hired labor. When a man had provided a suitable building and power to run the machinery, it was far more profitable to have fifty or a hundred machines than one. When the plant was enlarged the expenses were not increased as fast as the profits. The cost of supervising, buying supplies, and marketing the product was little if any greater for the larger establishment than for the smaller. It is small wonder, then, that factories sprang up everywhere in England where conditions were favorable.

The Industrial Revolution, which began with new methods of making thread, spread in time to every industry. Before we take up the great effect which it had upon commerce, politics, and social conditions in England, let us consider why it was that a revolution took place in industry at the end of the eighteenth century. Such things do not happen without very good reason.

Commercial conditions in the eighteenth century. In the first place, there was a great demand for English-manufactured goods during the eighteenth century. English traders had opened up markets in the New World, in the East, and in Russia, as well as in the continental countries nearer home. Clothiers were kept busy trying to supply the demand. From 1733 when Kay invented the flying shuttle, the weaving process had been much more rapid than the spinning. In every well-regulated household the girls were taught to spin when they were little tots, and they were expected to exercise themselves diligently in the craft in every leisure moment. It was only by this constant spinning that enough thread could be made to keep the family in clothes. The spinning of a whole winter was woven into cloth in a few days.

Under such conditions it is hardly strange that men should look for a way to spin more rapidly, and when a number of men turn their attention to such problems it is not long before someone discovers a solution. When the solution was discovered the more

enlightened business men—a class which had not existed before the mercantile period—seized upon it, put it into use, and improved upon it. Men's minds were ready for such things and business called for them, and so they were welcomed and used. Many inventions made in the centuries before, when the world was not ready for them, had been neglected and the benefit lost to mankind, only the tradition of their existence remaining. Now conditions were ripe, and the invention of a spinning machine set in motion forces which transformed the world.

The laissez-faire system. The expanding commerce was not the only force which had prepared men's minds for the industrial changes; in fact, there was as great a revolution in men's thought about industry and commerce at the close of the eighteenth century as there was in the methods of production. Although the new ideas had been growing for some time, they were not given definite and clear expression until 1776, when Adam Smith published his famous book, "The Wealth of Nations." The new ideas were grouped together into a system which was called the *laissez-faire* system.

This system was opposed at almost every point to the old mercantile system which had so long dominated thought. Acting on the theory of the mercantile system the English government had parceled out the foreign trade among regulated companies, imports and exports were regulated by tariffs and bounties, and manufacturing was circumscribed by minute restrictions. These restrictions were made and enforced by the guilds and companies with the consent of the government. The guilds and companies were naturally conservative; they made rules to prevent the introduction of new methods in industry, and especially of new tools. The guilds with their apprentice laws prevented the ready shifting of labor from one trade to another. The government added other restrictions upon the freedom of labor. The Elizabethan laws, for instance, empowered justices of the peace to fix both wages and the prices of foodstuffs. If such ideas as these had continued to govern the thought of the rulers of

England, the Industrial Revolution would have made very little headway. As it was, the doctrine of *laissez faire* served to set industry free.

According to the *laissez-faire* doctrine every restriction should be swept away. Merchants should trade wherever they found a profitable trade. Manufacturers should make their goods in the way which the demands of the market required and not according to a set of guild rules made fifty or a hundred years before and applying to the fashions of that time. Labor should move freely in search of the highest possible wages. This freedom was advocated on the ground that all business is governed, in reality, by the laws of supply and demand, and any effort on the part of the government to fix prices, wages, or the direction which business shall take is as harmful and in the end as useless as poking a broken stick into a piece of smooth-running machinery. By leaving men free to do business in the way that brings them the largest profits, one will compete with another, prices will go down quite naturally to a fair level, and wages will adjust themselves in the same way. The goods that are in demand will be manufactured without any command from the government. They will be manufactured because they are in demand and therefore bring a good price in the market. Laborers will turn to the trade in which there is a demand for labor and where, in consequence of the demand, good wages are paid.

This doctrine of free competition is not perfect, but it was far better than the mercantile system, which it gradually displaced. It was first applied by the government to the manufacture of goods. The guilds, which tried to prevent the use of the new machinery, were overruled by the government. When they attempted to break up the factories by applying the laws of apprenticeship they were blocked again. If it had not been for the new idea of the proper relation of the government to business, it would have been next to impossible to change industry rapidly.

Capital. A third cause of the Industrial Revolution was the existence of considerable accumulations of capital in the hands

of the cloth merchants. Although the spinning jenny was comparatively inexpensive, the spinning machines which followed it cost large sums. If there had not been a large number of men in England rich enough to purchase them and to go into business on a large scale, the whole movement would have been much retarded.

Science and the Revolution. A fourth cause of the rapid development of the Industrial Revolution was the advance which science made in the eighteenth century. In the Middle Ages scientists devoted their time to a search for the philosopher's stone, or the elixir of life, as it was also called. This imaginary stone could be dissolved, so tradition said. A few drops of the liquid made from it poured into melted lead would turn the lead to pure gold. A tiny drop of the liquid taken as medicine prolonged life indefinitely and restored tottering old age to youth and beauty. As long as men put absolute faith in such fairy stories as these and made no attempt to prove whether they were true or not no progress in science was possible. In the thirteenth century Roger Bacon, a monk, discovered that in order to learn anything of the forces of nature which surround human life, it was necessary to test by experiments the theories which men thought out. It had been the fashion of the Greek philosophers to reason out, according to the established rules of logic, the shape and size of the earth, the elements of which it was made, what fire was, and many similar problems. By this method they arrived at many truths, but they had no way to separate that which was true from that which was false. For instance, Aristotle, three centuries before Christ, said that the earth was round, but he never proved it. Roger Bacon was the first person who taught that theories should be tested by experiment and proved true before they are accepted. The story goes that Bacon set up a laboratory in his cell, where he carried on his experiments in chemistry and physics. The country people going by used to peek in and then run away in terror, declaring to their neighbors that they saw the devil with hoof and horns, spouting fire,

working there with the monk. Even the Church believed that he was trying to find out more about God's creation than man should know and punished him for his experimenting. In the course of his experiments he seems to have worked out a simple steam engine, and perhaps it was this engine, with its fire and steam, which the country people took for the devil.

Unfortunately few people followed in Bacon's path. Perhaps they feared the disapproval of the all-powerful Church, which was sure to be suspicious of innovations. But here and there one appeared brave enough to put to the test the theories in which he believed. When Columbus sailed west to reach the East he was testing out Aristotle's theory, in which he himself put faith, as to the shape of the earth. Explorer after explorer risked all to prove that Columbus was right in his theory that Japan and China might be reached by a passage through America. It took a hundred years for men to realize that no such passage existed outside of their own imaginations. By the eighteenth century the scientific method of investigation which Bacon had advocated was adopted by scientists, and with it the advance of science began.

At first scientific men worked out problems for the love of knowing the truth. Soon business men began to see how the knowledge which the scientists were acquiring might be turned to practical use. From that time on science made rich contributions to the advance of industry. Chemical bleaching, modern dyes, the steam engine, the electric motor, the gasoline engine, the telephone, and a thousand other inventions are based on the work of the scientist.

Effect of the Industrial Revolution. *Effect on production.* The effect of the Industrial Revolution is most far-reaching and most profound. There is no department of life which is untouched by these industrial changes. Even our thoughts and feelings are not those of our ancestors a hundred and fifty years ago. Philosophy has shaped itself to the new order of things, and politics has been revolutionized to meet the new conditions. It will be impossible to follow all the changes which the new methods of production

have brought about, but those which are most closely related to our subject we will take up in turn. One of the immediate effects was the great increase in the production of goods. When Hargreaves set in motion an eight-thread spinning machine he multiplied by eight the man power available for spinning; when a hundred spindles were put into one machine, and the machine attached to a water wheel or an engine, the one man who tended it was producing as much as a hundred spinners had been able to produce before. More thread meant more cloth, and more cloth meant better clothes for the people of the world.

Cheaper production. The new machinery also reduced the cost of production very greatly. This made it possible for the people of small means to have better clothes and more of them than ever before. It also greatly increased England's commerce. The machine-spun yarn of England was sold everywhere because it was much cheaper than the handmade thread of the other countries. And the same thing was true of other manufactured goods.

Effect on skilled labor. The effect of the Industrial Revolution on the skilled workers was great indeed. As each new machine was invented, it drove into dire poverty the craftsmen who made their living by handwork in that line. After spinning machinery was introduced, the price of thread went down so low that the thread a family could spin by hand, working their hardest, would not bring in enough to keep them from starvation. No choice was left but to seek work in the factory or take up some other trade. In the factory the skilled workman found himself in competition with the unskilled worker, who could tend a machine as well as he. His wages would be no higher than the unskilled worker's, and as machinery produced so much more goods with the same number of workers, he was fortunate if he found employment at all. Workers bid against each other for jobs. This brought wages down so low that the women and children had to go to work to help out the family income. In the end this made matters worse instead of better. The employers found that the women and children, to whom they paid less, were quite as able as the men to do much of the work in the factory, and so they discharged the

men and kept the women and children. It was no uncommon sight to see a man sitting in front of his door smoking while his wife and children earned the living for the family. The skilled craftsman, who had been able to make a comfortable living for his family, saw the unskilled members of his household earning a bare living as wage-earners, while he was out of work entirely.

Effect on the unskilled workers. The effect of the Industrial Revolution on the unskilled workers was to force many of them out of the homes and farms and into the factories. This brought about a change in the work they did and the conditions under which they worked.

The hours were about the same. In the country people who had little farms to look after were accustomed to work from four o'clock in the morning to eight or ten at night in summer and from dawn to dark in winter ; in the city a twelve-hour day was customary ; in the factory they were required to work twelve or fourteen hours a day, but this was not new to them. Even when in a rush of work the factory was run fifteen or sixteen hours a day, the older employees were not kept at their task longer than often happened on the farm at harvest time or planting. There is one exception : in the homes the children had not been kept steadily at work for as long hours as their elders ; in the factory their hours were the same.

Change in character of work. The kind of work which laboring people did under the new system was entirely different from that to which they had been accustomed. In their homes women and children worked at carding, spinning, sewing, knitting, as well as housework and cooking ; on the farms they milked the cows and goats, made butter and cheese, and cared for the chickens and geese. In the factory they stood or sat at a machine all day. Their work usually required little muscular effort, and in that sense it was easy, but it was exceedingly monotonous. The same operations must be performed over and over again, day after day, and the speed which the machine set must be maintained by the worker. To the man the change was equally great. On the farm

plowing was followed by sowing, cultivating the ground, shearing the sheep, reaping the grain, and so on ; in the factory there were no such changes to break the monotony. The set speed at which he must work was quite as annoying to him as to the woman. He could no longer rest on his spade and watch the clouds or lie under a shade tree while the harvest cup was passed around. If he lagged at his task, the master beat him with a strap to wake him up.

Conditions of factory buildings etc. The conditions under which the factory workers spent their long hours of labor were of the poorest. Before steel-frame buildings were invented, the modern factory with its enormous windows was impossible to build. At best, factories were large buildings with small windows, poor heating arrangements, and no provision for the comfort of the worker ; at worst they were ramshackle wooden buildings, made-over barns, or hastily constructed sheds put up to meet the needs of a rapidly growing business. In some of them water stood on the floors much of the year. Most were hot in summer and cold in winter. In many the air was full of dirt and lint and foul from poor ventilation. The machinery was provided with none of those safety devices which have been developed in recent years, and it was not even shut in by railings to prevent those passing by from injury. Innumerable accidents occurred to children of ten or twelve who, exhausted by the long hours of labor, had lost control of their muscles and fell against the machines.

Employment of orphans. One of the most serious effects of the factory system upon the working class came from the employment of orphans in the factories. As machines were developed to the point where they required only the simplest tending, a larger and larger number of children could be employed. The demand for child labor exceeded the supply, and this led the factory manager to apply to the overseer of the poor, who had charge of the orphans. It was customary to apprentice these children to craftsmen or farmers, who trained them in their own occupation. The managers proposed that these children be apprenticed to them. This proposal would have been entirely unfair

to the children, even if they had been well treated. In the home of a farmer they were learning something of real value to them in their later life, while in the factory they were set at a routine task from which they learned almost nothing. These children were housed, clothed, and fed by the factory authorities. Instead of enjoying the home life of the master, they were gathered by hundreds in sheds, where they were crowded together like cattle. Their clothing was of the poorest and cheapest, and their food was often inadequate and unfit for human use. As these children were sent to the factories when they were only six years old, it is not strange that the poor living and hard work killed many and made physical and mental wrecks of many more. In the factory they were kept at their tasks by beatings; in their life outside the factory they were guarded like a gang of prisoners lest they run away. Robert Owen in 1815 writes of them as follows: "In some huge factories from one fourth to one fifth of the children were cripples or otherwise deformed, or permanently injured by excessive toil, sometimes by brutal abuse. The younger children seldom lasted out more than three or four years without some illness, often ending in death." In 1832 an overseer made the following admission:

The children were incapable of performing their day's labor well towards the close of the day; their fate was to be awake by being beaten, and to be kept awake by the same method. . . . The children and young persons were sometimes successful in their attempts to escape from labor and confinement. I have gone after them on horseback, and brought them back myself. Those brought back were taken into the mill, and got a severe beating with a strap; sometimes the master kicked them on the floor, and struck them with both his hands and his feet. . . . When the hands worked those long hours, the master came himself and roused them in the morning, and those that would not rise, I have seen him take a pail of water and throw it upon them to make them rise.

Children only seven years old sometimes worked from four in the morning until eight at night, with only thirty minutes at noon for dinner. Why it was that any owner should be heartless enough

to let such things go on, it is most difficult to say. The answer probably lies in this: frequently the owner of the factory was a man who had never worked under the conditions which he imposed upon his employees. He had no experience of his own which enabled him to understand and sympathize with their sufferings. In many cases he was seldom in the factory himself; the actual supervision was left largely to an overseer, while the owner devoted himself to the financial management of the business. Of the overseer he asked that he produce the best possible goods at the least possible cost. An overseer who was too kind-hearted to drive the workers was very likely to lose his job and be succeeded by someone who would get more work done for the same outlay in wages.

Indifference of the public and the government. Even though we may explain the indifference of the men responsible for the bad treatment from which the factory workers suffered, it is still harder to account for the indifference of the public and the government. At the present time such conditions would rouse a storm of protest in the newspapers and the legislature. The explanation of the attitude of the public lies in the conditions and the thought of the time. Less was expected for the worker than at present. Long hours and hard work were regarded as his proper portion. As the worker had no vote it was of no interest to the parliamentary representatives from the factory districts to protect his interests. Most important of all, few except those immediately concerned knew much about the conditions in the factories. The mill owners would hardly enlighten the public, and the workers were too ignorant to make their sufferings known.

The awakening; factory legislation. As early as 1815 Robert Owen, a very enlightened manufacturer, made a trip through the factory district. He was horrified by what he saw, and he attempted to arouse the public to the conditions which existed. In 1830 other men, among them the Earl of Shaftesbury, a political leader and a member of Parliament, took up the cause of the children in the factories. A committee was appointed to investigate, and the facts brought out by this investigation shocked

people so that the first factory act was passed in 1833 (an act of apprentices, 1802, to regulate the conditions and hours of work of orphans placed in the factories by overseers of the poor is not counted as it did not apply to all children in factories). This act was very mild when compared with the acts which have followed it. It provided that no child between nine and thirteen years of age should work more than forty-eight hours in one week in a factory, and between the ages of thirteen and eighteen not more than twelve hours a day. The acts which followed still further reduced the hours of labor for children in factories, raised the age at which they might be set to work, and required better conditions in regard to cleanliness, light, ventilation, and safety devices on machinery. In time the labor unions rose to an influential position and won shorter hours and better working conditions. Gradually people in general have awakened to the responsibility which society owes to all its members.

Effect of the Industrial Revolution on the growth of cities. The Industrial Revolution had a tremendous effect on the growth of cities. Many of the towns which already existed increased enormously in population; many new cities sprang up in the center and west of England, where deposits of coal furnished fuel for the steam engines which drove the factory machinery. London, which had always been much the largest city in England, grew apace. The cities in the south and east—such as Cambridge, Winchester, and Canterbury—stood almost still, while Liverpool, the port of the manufacturing district, rose from 35,000 to 552,425; Manchester from 40,000 to 392,676; and Birmingham from 30,000 to 400,757. The increase in the total population of the country (England and Wales in 1770 had between 7,000,000 and 8,000,000 people; in 1881 they had 35,000,000) accounts in part for the growth of the cities, but not entirely. In 1770 only half of the people of England lived in the towns; in 1880 two thirds of the population were to be found in the cities.

All sorts of new problems arose with the rapid and enormous development of the cities. The type of waterworks and sewerage systems that answered for 30,000 people were out of the

question for 400,000. Unfortunately many towns tried to enlarge the equipment they already possessed. They soon learned by bitter experience that they must think and plan on an entirely different scale. Often the increase came not as a steady growth but in sudden jumps, each jump the direct result of the establishment of a new factory or a new industry in the town. There was no time to build suitable dwelling houses for the workers; they were crowded into those already existing, and so the tenement house and the slum were produced.

Up to that time there had been no city in England (excepting London) larger than Bristol, which had 100,000 population, and there were very few cities of more than 40,000. Each family in the city, as in the country, had a house to itself; if the house stood on the outskirts of the city beyond the ancient walls, it had a garden as well. Now families coming from the country to work in the factory were packed into a single room. No proper sanitary arrangements were provided; refuse was thrown into streets and alleys and left to fester. When conditions grew bad enough the cities roused themselves to action and instituted sewerage systems, garbage collection, street-cleaning departments, and tenement-house regulation and inspection; the narrow streets were widened to meet the needs of the greatly increased traffic which they had to bear; transportation systems, horse busses, and horse cars made their appearance in response to the crying need which the expanding city had created; in short, the medieval town had disappeared, and in its place had risen the modern city.

Effect of the Industrial Revolution on agriculture. The effect of the Industrial Revolution on agriculture is difficult to separate entirely from the effect of the European wars in which England was engaged from 1793 to 1815. While the war lasted it was out of the question to import foodstuffs to any extent. This pushed up the prices of agricultural products, which, on account of the demand created by the Industrial Revolution, had begun to rise even faster than they otherwise would have risen. In fact, the war tended to exaggerate what would have been in any event the effect of the Industrial Revolution. Let us bear this

in mind as we study the changes which took place in agriculture in the years that followed the invention of the spinning jenny.

Increased market for foodstuffs. The most direct effect of the Industrial Revolution was to create a greater demand for agricultural produce. It was not that factory workers ate more than other people, but instead of farming a little, as they had done under the domestic system, they were now obliged to buy all that they ate. This opened up large markets for the things that hitherto people had not raised to sell very much, such as eggs, milk, chickens, vegetables, and the like. As these workers preferred a diet of meat and bread or perhaps found it easier to get such things, the market for those things was much larger, too. At the same time the population of England was growing faster than it had in all history, and a large part of this increase was finding work in the factory and a home in the cities. This left more work for each farmer to do to feed the people of the country.

Rise in prices. The increased demand for food drove up prices. In years of good harvests they showed only a modest advance, but in years of poor crops they jumped ahead in a way that almost doubled the cost of living in two years. A good harvest brought down prices again, but as long as the war lasted they remained far above what the Englishman regarded as normal.

New methods of farming pushed by capitalist landowners. The high prices caused great distress among the working classes, as wages did not rise as fast as the cost of living. During the war, when every line of industry was running at full speed, there was work for everyone, and the worst effects of the high cost of living were not felt; but when the war ended, absolute starvation stalked among the poor. Two classes of people were moved to action by the high prices of agricultural products: public-spirited men, who realized that England must increase her food supply if she would win the war; and men of means, who saw in farming a good investment for their capital. Both classes were wise enough to learn all that they could about the best methods of farming from such men as Arthur Young. They introduced these methods on their farms and so greatly increased the production. The

better breeds of cattle and sheep were widely adopted, the root crops and clovers were planted, the land was carefully manured, and the improved implements were used.

Inclosures and the disappearance of the small landowner. The capitalist landowners were quite unwilling to be restricted by the countless regulations which governed the use of the open-field system. Where they inherited estates so farmed they made every effort to obtain the right to inclose. As many members of Parliament were convinced that inclosed land produced more than land that was not inclosed, they granted acts of inclosure more readily than ever before. The inclosures, which deprived the little man of his pasture rights, made it difficult for him to make a living; in addition he was obliged to compete with men who were able to raise better sheep and better crops than he, and he did not have the capital to buy the new sheep, new implements, or new seed even if he had been intelligent enough to use them after he bought them. Under these conditions it was hardly strange that the small farmers gradually sold out and became wage earners and that the land fell more and more into the hands of the larger holders. On the production of the country as a whole this had a good effect, for a large tract of land can often be farmed more profitably than a small one. It does not pay to buy a new model plow if one has only five or six acres to plow, but it pays very well for fifty or a hundred acres, and so it was with many other things. On the small landowner, now turned wage earner, the effect was bad. With no house and land of his own he was likely to spend his few extra pennies on drink where, in other times, it would have been saved to buy a cow or a pig. With land of his own and a cow he and his family were sure of something to eat, no matter how bad times were; but now a financial panic meant no work, and then starvation or charity stared him in the face.

Reclamation of waste land. As men of wealth bought up the land, the price of land rose. Pastures which had been roamed by sheep since inclosures for sheep-farming first began were plowed up and planted; rough wastes were cleared and plowed, swamps

were drained, and woodlands were cleared. With lower prices for meat and grain such lands would cost more to cultivate than one could get for what they produced. As long as the high prices lasted their cultivation was profitable.

Depression following the war. The Battle of Waterloo, in 1815, brought peace to England and with it a great business depression which plunged thousands of people into misery. With her great navy England had been able to give her merchant ships better protection on the seas than any other nation, and so her goods had little competition from her European rivals in many markets. Now that peace was declared, France and Holland were selling their wares in competition with the English. The English factories had made up more stuff than they could sell under peace conditions, and they were obliged partially to close down; but at the very time when they were discharging their workers, soldiers and sailors were coming home by the thousand looking for employment. For every job there were two applicants. Wages fell with a crash. The farmers were in much the same predicament as the manufacturers; they had brought more land than ever before under cultivation just at the time that the factory people in England had less money than ever to buy. One farmer competed with another for what business there was, and prices fell. Those who had bought or rented land at war prices found that they could not make the interest on their investment or pay their rent; those who had mortgaged their land were sold out. Much of the land that was reclaimed had to be allowed to return to its wild state. At the same time farmers who held their land were driven to farming in a more careful way than ever before. To produce with the least possible expense means efficiency in farming, and this the hard times taught to those who survived the depression.

Introduction of machinery. By 1837, when Queen Victoria came to the throne, agriculture had recovered from the hard times. In the next thirty years two changes took place—the introduction of machinery and the use of artificial manures. Although a number of farm machines had been invented before this time, they

had not been adopted in England because labor was so cheap that they did not pay. The use of steel in the plow, spade, and other farm tools had increased their efficiency, but of the steam plow, the reaping machine, and many others that had been invented little use was made. Between 1837 and 1877 steam plows and steam cultivators came into use. Mowing machines, reapers, threshing and winnowing machines, began to be generally employed.

Nor did mechanical science neglect the live-stock industry, the development of which, in connection with corn(grain)-growing, was a feature of the period. Here, too, machinery economized the farmer's labor. He already knew the turnip-cutter and the chaff-cutter; but now the same engine which superseded the flail, pumped his water, ground his corn, crushed his cake, split his beans, cut his chaff, pulped his turnips, steamed and boiled his food. Without the aid of mechanical invention farming today would be at an absolute standstill. No farmer could find, or if he found could pay, the staff of scarce and expensive labor without which in 1837 agricultural products could not be raised, secured, and marketed.

Application of chemistry to agriculture. The same period which saw the introduction of machinery into farming saw also the application of chemistry to the problems of agriculture. Scientists discovered that in order to grow certain crops chemical elements were necessary. The first step, then, was to examine the soil and by chemical analysis determine what crops would prosper on it. When the soil became exhausted, instead of putting on it a manure which contained a mixture of elements, some of them needed and some not, the chemicals which were actually needed were supplied. From this time dates the use of nitrate of soda, superphosphates, and potash, of which we hear so much at present.

England ceases to feed herself. In 1846 occurred an event which marked a turning point in English agricultural history. In that year the duty on imported grain which had protected the farmer for centuries was removed. As long as this duty stood, the grain which came into England from Russia or America paid a duty which enabled the English farmer to sell his grain at a

price equal to the cost of raising grain in America plus the freight across the ocean plus the duty. That was a goodly sum. This high price came out of the pockets of the factory workers and other wage earners, who felt aggrieved that they were taxed for the benefit of the farmer. Until well into the nineteenth century statesmen took it for granted that England must feed her population, and if she was to do this the farmer must be protected from foreign competition. By 1846 it was becoming evident that the population was growing beyond the possibility of this, and at the same time the improvement in all forms of transportation was making it possible for England to depend on the grain of other lands. These other countries could raise grain far cheaper than England because they had cheap land of a richer soil. From that time on, until the World War broke out, English agriculture turned more toward market gardening and dairy farms, which met no competition from farther off than Holland and Denmark. During the war there was a renewed attempt to raise enough wheat to feed the country. Much the same thing has happened that happened in the Napoleonic wars—waste land was reclaimed, parks were planted, and every available spot was set to work to feed the nation in its time of stress.

The iron and steel industry. We have studied the Industrial Revolution as it occurred in the textile industry and in agriculture. We have seen much the same thing happen in each case. Machines came into use, science was applied to produce results more accurately and with the least possible waste of effort or material, production was organized on a larger scale than ever before, and the amount produced was increased out of all proportion to the number of laborers employed. Much the same changes took place sooner or later in every other industry. It would be impossible to take up each one in a single volume, but there is one more which is so vitally important to modern life that without an account of its development any history of industry would be very incomplete. This is the steel industry.

Steel the foundation of modern life. The textile industry and agriculture rose to importance in the history of civilization

long before the steel industry, for the very obvious reason that food and clothing are far more necessary to men than steel plows, steel swords, or steel rails. But modern civilization as we know it could not exist without steel—steel in great quantity and cheap steel. Our machinery could not be made without steel; our high buildings would not stand up without a steel frame; our railroads need steel rails, steel cars, and steel locomotives; and our goods cross the ocean in steel ships. If steel could not be produced at small cost it would be out of the question to use it for these things. It is apparent that if the steel industry had not advanced very much our whole civilization would have been stunted.

Steel is nothing more than a fairly pure grade of iron into which a small amount of carbon has been worked. It has certain advantages over iron. A knife of steel may be given a far better cutting edge than a knife of iron, steel bridges are stronger than those of iron, and steel rails wear better than the iron rails which preceded them; in fact, for most purposes steel is stronger and more durable than iron.

Iron. Iron itself is far more serviceable than any other metal except steel, and it would have been used very widely in the form of either iron or steel in early times if it had not been so difficult to manufacture. Like gold and silver, iron is one of the seventy or more elements of which the earth's surface is composed; unlike the precious metals iron is found almost everywhere. Unfortunately it is always mixed with other substances, and usually so thoroughly mixed that it is very difficult to extract. Most frequently it is mixed with stone, and then we call the combination iron ore. It requires a very hot fire to melt iron, but when it is melted it flows together naturally. Even when only half melted it will run out of the stone down into the bottom of the fire into which the ore has been thrown and there form a great soft lump called a bloom.

Scarcity of iron in early times. Iron was very scarce and expensive all through ancient and medieval times because of the difficulty in getting up a fire hot enough to melt it out of the ore. Copper and brass were used for cooking utensils, and

bronze for implements and weapons, wherever possible. The Greeks used some steel swords because they found them so very much more effective that they were worth their high cost, and all the great wars of the Romans were fought with steel blades. The knights of the Middle Ages wore iron and steel armor and carried steel swords, daggers, and spears, but they paid very high



CATALAN FURNACE SHOWING EARLY METHOD OF MAKING IRON

for such luxuries. The common man was armed with a club, a bow and arrow, or, at best, a wooden-handled spear with a sharpened steel tip fastened on it.

Early methods of manufacture. In early times iron was manufactured in the following manner: Rocks containing iron were broken into small pieces and put into a charcoal fire. The fire was kept burning as hard as possible by men who stood by blowing it with a bellows. After a few lumps of ore had been put in, more charcoal was added, then more ore, and so on, until a few pounds of softened iron had run together at the bottom of the fire. This was heated again and pounded on an anvil to hammer out the stone and other impurities which it still contained; it was often necessary to reheat it several times before the iron was sufficiently pure to use. To make steel the iron was heated and a very little carbon worked into it. A piece of hot charcoal was

often used for this, as charcoal is almost pure carbon. As no fire could be made to burn hot enough with a hand bellows to reduce the iron to a fluid, the mixing had to be done very much as we work a flavoring into molasses candy, only the pulling was accomplished with rakes and sticks instead of by hand. Such a process involved much hard work in the production of a small amount of steel. As a result steel was little used when anything else could be made to answer, as we have seen. More than that, the iron and steel produced with so much difficulty must be laboriously hammered out into armor, knives, swords, and the like. As the iron was never thoroughly melted, it was impossible to make any articles by the simple method of casting.

Blast furnace. During the Middle Ages ironmasters tried to find some means of creating a fire sufficiently hot to melt the iron so that it could be poured into a mold. At length they succeeded by inventing the blast furnace. This is very much like a short, fat chimney with a powerful bellows blowing air into it at the bottom so as to cause a very strong draft through the burning mass of fuel and ore. At first the furnaces were only fifteen feet high, but later they were as much as thirty feet. The bellows was operated by water power. By means of this device iron was actually reduced to a fluid state, and the casting of iron became possible.

Unfortunately iron when melted attracts impurities, and the product of the blast furnace, although good enough for casting, was not pure enough for the blacksmith to use, neither was it pure enough to be made into steel. Before it was fit for either of these uses all foreign substances must be hammered out of it. This made it still expensive to produce the malleable iron of the blacksmith's shop or the steel so much needed for tools and weapons.

Use of coke. There was still another obstacle in the way of the abundant production of iron of any sort. In the melting of ore charcoal was used in great quantity, and in England and other places where the iron industry was extensively carried on the forests had been so cut off by the making of charcoal that there

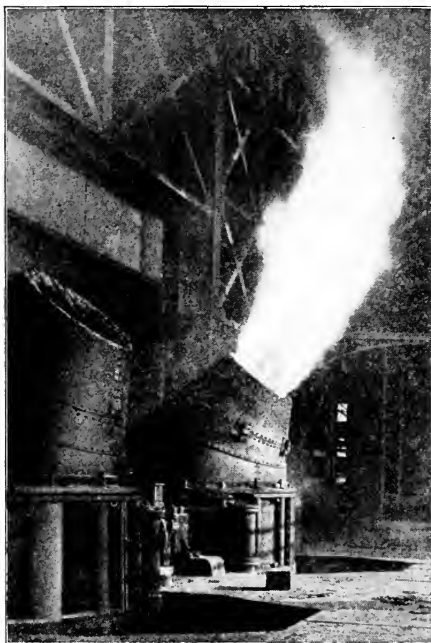
was a great scarcity of fuel. For many years bituminous coal (commonly called soft coal in this country) had been burned in the fireplaces of city homes in England for cooking and heating, it is true, but in its natural state this coal was unfit for smelting iron. About the middle of the eighteenth century, when the need of an increased production of iron was becoming acute, someone found out that if this coal was subjected to much the same process as that by which wood was turned into charcoal, it could be used in place of the latter. Coal in this form is called coke. From this time on the iron industry grew rapidly, and greater interest in the industry was awakened.

Cort and the puddling process. One result of this greater interest was the invention of the puddling process of steel-making by Henry Cort in 1784. According to Cort's method the molten iron from the furnace was put into a great basin across which rushed flames from a fire close by. These flames burned out the great quantities of carbon, which is the most important foreign substance in the iron as it comes from the furnace. As the flames burned over it a man with a rake stirred the metal. At last, when the carbon was all gone, a lump of iron remained which was pure except for the slag or melted stone in its pores. This lump was then pressed between grooved rollers which squeezed out the slag very much faster than it could be hammered out by hand. To make steel of this purified iron the iron was put into a closed retort with just the correct amount of red-hot carbon and kept hot for days while the carbon slowly soaked into the iron.

Although Cort's method was cheaper and better than that which had preceded it, steel made by this process was still too expensive to be used for very many purposes for which it would have been better than the materials then in use. By 1850 the need for cheap steel had become acute. Shortly after that date, in response to the demand, an English engineer, Sir Henry Bessemer, invented the process for making steel which bears his name. That process is described in the extract on the following page.¹

¹ From J. Russell Smith's "The Story of Iron and Steel."

Bessemer ran tons of molten iron into a great pear-shaped retort, and through holes in the bottom air, under pressure, was blown. The oxygen of the air united with the carbon in the molten iron, and the heat of this burning made in the retort a roaring fire, generating enough heat to keep the iron hot and make it hotter. Sometimes



MAKING STEEL IN A BESSEMER CONVERTER

it became too hot and had to be cooled by steam or masses of cold iron thrown into it. In twenty minutes this air blast had burned the carbon out of many tons of metal, and the iron now having the composition of wrought iron is raised to steel by having thrown into it spiegel iron, or ferromanganese, an alloy. Both are rich in manganese and carbon. As the iron content of the Bessemer converter is known, and the content of the spiegel iron is known, the carbon in the steel is under perfect control. The workman watching the flames cuts off the blast at the moment when the changing color tells him the carbon is gone. The carbon of the added material

makes steel, and the manganese gives to the steel a toughness needed to make it stand the strain of being rolled into desired shapes while red-hot, without breaking.

At last a way to make steel with very little human labor had been found. The steel business grew by leaps and bounds as the use of steel spread from one department of industry to another. This was the day of the introduction of steel rails and steel bridges and steel boats to take the place of those of wood or iron.

Our modern skyscrapers were possible the moment that steel frames for buildings were within the range of possibility.

Within the last few years Bessemer steel has proved unequal to the strains sometimes put upon it. The process is all carried through so quickly that the carbon is not always thoroughly mixed with the iron; a streak of carbon in a rail may cause a long splinter to crack up from the rail as a heavy engine pounds over it, and more than one railroad accident has been caused in this way. To meet this difficulty steel is made for exacting uses by the puddling method of Cort somewhat modified so as to reduce the expense. A more reliable grade of steel is produced, but it is more expensive than that made in the Bessemer converter.

TOPICS FOR DISCUSSION

1. Give five reasons for the slow development of industry up to the year 1770.
2. What industry with which you are familiar is at present changing from the craft or domestic system to the factory system? How many of the typical features of the Industrial Revolution does it present?
3. Which would be better for this country today—the *laissez-faire* system or the mercantile system?
4. Imagine yourself in a factory in 1815. What would you see?
5. How would your life be different if the Industrial Revolution had never occurred.
6. On the whole has the Industrial Revolution benefited or injured the workers?

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CHAPTER XIII

EFFECTS OF THE INDUSTRIAL REVOLUTION

Development of transportation facilities, 1750-1914. *Effect of the Industrial Revolution on transportation.* The Industrial Revolution brought about a condition of things which rendered necessary better facilities for transportation. The factories, like hungry monsters, must be fed constantly with raw material, and that in larger and larger quantities as they grew. From the factories there was a steady flow of finished goods. This could not be disposed of in the neighborhood, for the new machines had so increased production that in most cases the immediate neighborhood of a factory would be supplied for a year after a factory had been running a few weeks. If the goods could not be taken to more distant markets the factory would have to close down. The roads and waterways, which up to this time had met the needs of trade, were so crowded and overworked by the new conditions that something had to be done. We shall understand more clearly the difficulty if we review the development of transportation facilities to the time when greatly increased production put new demands upon them.

Conditions in the eighteenth century. All during the Middle Ages the chief highways of England had been the old Roman roads. Besides these there were the paths worn by constant use between each village and its fields, mill, and pastures, and the sledge tracks which led from one village to another. In the neighborhood of a seaport or a large town these widened and became roads of a very poor sort. In the summer they were dusty beyond imagination, in the spring and fall they were little better than mudholes, and in the winter they were cut up by deep, frozen ruts. As long as they were only used by pack animals and ox sleds it was bad enough; but when, in the days of

Queen Elizabeth, wheel vehicles were introduced, conditions became intolerable. The villagers of the towns through which the roads passed were called upon to put the roads in repair. As no one knew much about how to build roads, the result was very poor. In some places the mud was scraped off the road, leaving it lower than ever and more likely to fill up with water at the next rain; in others a load of stones was dumped in the road, which made it rougher than before. At the beginning of the eighteenth century a few turnpike trusts had been established. These companies were given portions of the more important roads, which they improved. At either end of the strip tollgates were erected, and the road was kept in repair out of the money collected as tolls from all who used it. No doubt the creation of turnpikes brought some little improvement, but it was not very great, and travelers continued to complain bitterly of their difficulties in getting from place to place. Such were the conditions of the roads in the early nineteenth century.

Water transportation: ocean, rivers, and canals. The government of England would have made a more serious effort to improve the roads if there had not always existed a very fine system of waterways. In proportion to her size England has a very long coast line. Small boats had always found their way from port to port on the coast of England, carrying the coals of Newcastle to London and the caps and cloths and metal goods of London to Dover, Southampton, and Bristol. The numerous rivers enabled small ships to reach places which are now regarded as far inland. Cambridge, Coventry, and York, for example, were all accessible to vessels engaged in the coasting trade. Where rivers were too shallow to admit ocean craft, smaller boats could make their way from town to town along their banks. In some cases the channels of the streams were deepened, before the eighteenth century opened, by the towns which they served.

Such, then, was the situation when the Industrial Revolution began. Roads worthy the name were exceedingly scarce, and those which existed were very poor. It was no uncommon thing for coaches to be stuck in mudholes on the best of them, and on the

worst no wheeled vehicle would dare attempt to travel. The ocean and river transportation was more satisfactory and less expensive, but it was slow, and points within a few miles of each other could not be reached except by a long and circuitous journey. With the serious demand for better transportation facilities which the new methods of production created, attention was first turned to improving the waterways. Streams were deepened and canals were dug which connected mines and industrial centers with rivers, and rivers with each other. A hundred canals had been built before 1800, and by 1834 over forty thousand miles of canals and navigable rivers formed a network over England. This development of the waterways greatly aided the expansion of industry by lowering freight rates and reducing the danger of breakage. A single canal boat pulled along the smooth surface of the canal by one horse carried as much goods as ten carts, each with a team of horses; one man and a boy to help him could handle the boat, while the carts would call for ten drivers. Fragile wares carried in wagons were liable to be broken as they jounced over the rough roads, and this breakage added to the cost of transportation.

There were certain drawbacks to water transportation which could not be overcome. It was extremely slow at best, and with all the streams in England there were still many points which could not be reached at all. Roads must always be used to some extent. Just before 1800 the need of better roads was brought very forcibly before the public by the establishment of regular stagecoach lines between important places. Before this time coaches had been used, but they had not been run on regular schedule. The convenience of the new arrangement was great, but the more people traveled, the more they realized the necessity for better roads. In response to the demand Parliament took up the matter in 1811.

At this time there were two men in England who had given the question of road-building careful study. These were Thomas Telford and John McAdam.

Each of these men had worked out a method of road-building which was far superior to anything known in England at the

time. Telford made his pavement by putting down a layer of large blocks and placing on them small stones which were rolled down to a hard, smooth surface. The road was made three inches higher in the middle than at the sides so that the water would run off. McAdam's pavement differed from Telford's only in that no blocks were laid as a foundation for the road. The earth was leveled off, the required curve was made, and directly on this three or four layers of cracked stone, each finer than the one before, were laid. Both Telford and McAdam were employed to build highways by Parliament and by the town and county governments. Very soon public roads of a greatly improved type had superseded the privately owned turnpikes and the mud roads which, relics of the Middle Ages, had survived into the nineteenth century.

Development of the railroad. Even before the Telford and McAdam pavements were invented, mine owners were experimenting to discover a type of road over which they could draw the clumsy carts laden with the ore from the mines. The mines and quarries were often some distance from towns or waterways, so that the product from them must be carted for miles before it could be disposed of; and the wagons laden with ore or stone were so heavy that they required a large number of horses to draw them, and cut to pieces any ordinary road in a very short time. The result of these experiments was a road made of two rails of wood or iron laid on wooden sleepers. On these rails the wheels of the carts moved easily, fewer horses were necessary to draw them, and the road stood the strain of constant use.

Development of the steam locomotive. In the course of time the mine owners asked themselves why a steam engine which could pump water out of a mine should not also draw the carts of coal over the little track. In 1813 George Stephenson answered this question by constructing an engine which drew trucks laden with coal from the coal mine to the river. At first the engines were such rough, uncertain little things that no one dared use them for drawing passenger coaches. In 1825 a railroad was opened on which the passenger coaches were drawn by horses and the freight trucks by a steam engine. In 1830 a line

between Manchester and Liverpool employed a steam engine for all traffic. It was for this line that Stephenson invented his engine *The Rocket*. This engine was considered a wonderful invention because it could draw a load of nine and a half tons at the astonishing speed of thirteen miles an hour!

Spread and improvement of railroads. At first only short lines of railroad were built to connect important places. A railroad required a large amount of capital, and it was only lines over which there was certain to be heavy traffic that would return a profit on the necessary investment. As the railroad proved its value, more and more lines were built, until there were few points in the country which could not be reached by rail. At the same time the method of laying tracks and the equipment of the roads improved so that the service grew in safety, speed, and convenience. The wooden or iron rails were superseded by rails of steel. Steel bridges were built which carried the railroads safely over streams and chasms. From light coaches, such as horses could pull, the long, steel-framed passenger coach with its many compartments was evolved. The truck became a freight car much like those with which we are familiar in the United States, and larger and more powerful locomotives were invented until types were produced which were capable of pulling many thousands of tons at a rate of from sixty to seventy miles an hour.

Ocean transportation. During the mercantile period England had built excellent ships and sailed them with skill and daring. Without them she could not have laid the foundations of a world commerce and opened up a world market to English goods. It was the world market which had brought about the factory system of production, just as it was the national market which had brought the domestic system of production into being. Now the result of England's commerce became the cause for greater expansion. The new methods of production had piled up goods which were seeking a market. More ships! larger ships! faster ships! was the call which the busy factories sent out to the shipyards of the country. To the shipbuilders this demand presented a serious problem. The wooden ship of the time required great timbers and

huge masts such as the forests of England no longer produced. Across the Atlantic, in the United States, giant trees still grew, but to bring them across the water was an expensive matter, and the ships built from them cost more than those built in the shipyards of North America. Built at a smaller cost, vessels flying the flag of the new republic could carry English goods for less than the rates charged by the English shipmasters.

The English merchant had no liking for this state of affairs, and with the help of the ironmasters and the shipbuilders he soon found his way out. In 1807 Fulton built a successful steamboat. In the United States his invention was turned to use almost exclusively for river craft; in England the steamboat was developed for ocean traffic. About the same time that the steamboat was invented, the discovery was made that ships might be successfully constructed of iron or steel; and for steamships these materials are far better than wood. With her strongly established iron and steel industry England was in a better position than any other nation to build ships of these materials. While the Americans still clung to their swift and picturesque clippers, the English developed a steel steamship which by 1860 was the most efficient ship that sailed the seas. By that year England regained an unquestioned first place in shipbuilding which she had seemed about to lose to America twenty years before, and she remained as she had been since the middle of the seventeenth century, the greatest commercial nation of the world.

Results of improved transportation. With an efficient system of roads, canals, railroads, and ocean lines serving her, England became the workshop not only of Europe but of the whole world. The wool of South America and Australia, the silk of China, and the cotton of India and the United States were carried to her factories and sent out again as manufactured goods to the uttermost parts of the earth. The population of the country turned more and more to factory production, and the wealth of the country grew apace until England was prepared to finance undertakings of great extent, not only in her own country but in all parts of the earth. Textiles and iron and steel remained, as they had long

been, her two most important industries, but coal-mining and the manufacture of china, cutlery, silverware, and many others were small only by comparison with the other two.

The labor movement. One of the important effects of the Industrial Revolution was the impetus it gave to the rise of the trade unions and labor unions. Both trade unions and labor unions are organizations of wage-earners to better the conditions of their labor, and the two terms are often used interchangeably. Strictly speaking, a trade union is the organization of people skilled in some trade or craft, while a labor union is composed of unskilled or slightly skilled workers. The trade unions were the first to come into existence. In the early part of the eighteenth century industrial conditions were such as to call forth societies of this nature, and the Industrial Revolution, coming as it did at the close of the century, caused them to rise rapidly to great importance. At present they occupy so important a place in modern life that no one can understand the world of the twentieth century without knowing something of how they came to be what they are and to occupy the position which they now enjoy.

Why there were no unions in the Middle Ages. It is worth while, for a moment, to consider just why there were no trade unions in the Middle Ages, for by so doing we shall understand more clearly how the conditions of the eighteenth century called them into being and how the Industrial Revolution pushed them to great prominence. In the Middle Ages earners who were sufficiently intelligent to organize were the skilled workers in the trades—the journeymen. When very little capital was required to set up in business, most journeymen could confidently expect to start their own little shops in a very few years, when they had saved from their wages enough for their tools. With this expectation before them it was hardly worth while for them to organize and fight the masters, even if the terms of their labor were harsh. The rules under which they worked were made by the guild, by the town, or by the national government. In the guild the journeyman was recognized, and although he had ordinarily no voice his grievances were discussed by men who had once

been in his position. Very soon he expected to be a member of the guild himself and an employer of labor, and then the higher wages or shorter hours which he had fought to win for the journeymen would be turned against himself. To organize against laws of the government would have been regarded as rebellion and treated as such. To some journeymen it doubtless became evident that either for want of skill or business ability they would never be able to set up for themselves. Such men, however, were not sufficiently numerous or sufficiently influential with their fellows to organize the workers against the masters.

How conditions in the eighteenth century favored the creation of trade unions. By 1700 the domestic system had generally replaced the guild system of production. The masters were men who had large amounts of money to invest and frequently had not been apprenticed in the trade in which they now employed other men. They were men who were skillful in buying raw material cheap and selling the product in the place where it would bring the best price. There was little sympathy between them and the workers who served them. At the same time, the workers had come to see that no skill in their trade would ever make them masters. To set up as masters they must possess far more capital than they could ever hope to earn by the work of their hands and also that business ability which is frequently lacking in the skilled craftsman as it is in the artist. Under these changed conditions they drew together in a natural sympathy toward each other and a natural hostility toward the masters, whom they came to regard as the common foe.

Objects and activities of the trade unions in the eighteenth century. Craftsmen had always been the aristocrats of labor. They had by their skill earned sufficient sums to enable them to live in a decent and comfortable manner. As prices rose their wages had risen also, in the past. By the guild regulations as to the number of apprentices which one man could employ, they had prevented cheap labor from bringing down the wages of journeymen, and they had kept down the number of trained workmen so that there was plenty of work for all. During the eighteenth century many industries had moved into the country, where the

restrictions as to the number of apprentices were not enforced. Journeymen found great quantities of goods coming into the market which were made by unskilled workers—workers who would accept a less wage than themselves. As such goods could be sold for less than that on which the journeymen were employed, less and less work was given to them to do. They were idle, or else they were set to work at lower wages than formerly. This was all the harder, as the cost of rent and food was rising rather than falling. Instead of living as they and their fathers had been accustomed to, they were forced to lower their whole standard of living. They moved to poor districts, dressed themselves and their children shabbily, and actually suffered at times for want of food. It was to protect themselves from such evils as these that one trade after another organized. Very naturally these organizations looked to Parliament, which had so long regulated all phases of industry, for protection against the destruction which they felt was coming upon them. They asked that the rules in regard to apprentices should be enforced and that Parliament should fix wages in their trade. Toward the end of the century, when the new machines were being introduced, they asked that Parliament prohibit their use. At first Parliament agreed to do these things, but gradually a change came over the policy of the government. This change was due in large measure to the Industrial Revolution, which was replacing the skilled worker by a machine and so reducing the cost of goods while increasing the amount produced. The manufacturers and merchants represented to Parliament their side of the question. By the new methods which they had introduced they were able to produce goods for less than their rivals, the French and the Dutch. As a consequence they could sell more cheaply in the markets where all were competing—Russia, the Levant, the Far East, Africa, and America. If the cost of their goods was increased by a return of the old methods of production by hand, they would have to charge more for them, and then their trade would go to their rivals. If there was one thing that Parliament valued above all else it was the foreign trade which English merchants had built up, and this argument was too much for them.

The policy of protecting the standard of life of the worker, which Parliament had taken over from the guilds, was reversed, and the workers were told that they must make the best bargain they could with their masters. To the workers it was very clear that industries, like cotton-spinning for instance, which were making mill owners and merchants very wealthy, ought not to make them themselves poor, but they did not know how to rectify the wrongs from which they were suffering. Thrown on their own resources they resorted to strikes and to acts of violence. Machinery was attacked and broken up, and those who worked at it intimidated.

Combinations of employers or employees forbidden by government. Unfortunately just at this time the governing classes of England were witnessing the lawless destruction of life and property which was going on in France as the working class obtained control in the French Revolution. This gave them an intense fear of what the worker might do, especially if he combined with other workers to carry out his schemes. The disturbances which followed the introduction of machinery increased this fear. In 1799 Parliament passed a law forbidding all combinations of either employers or employees. This law was not enforced against the employers and only spasmodically against the workers. When the law was enforced, it was enforced with much severity, and the unfortunates upon whom punishment fell were regarded by their fellows as martyrs. It served to turn some of the trade-unions into secret societies, with oaths of secrecy and midnight meetings, and to put others out of existence. In spite of the difficulties which confronted them, unions were formed in one trade after another as each trade felt the effects of the competition of the new machinery and the factory system. These unions were short-lived, for as a rule their opponents—the employers backed by the government—were too strong for them. Discontent ran high and was intensified by the financial panic which followed the close of the Napoleonic wars in 1815. This threw many out of work and brought down wages. Much of their complaint was directed against the law of 1799. Men felt sure that labor unions would bring back the conditions for which they longed.

In 1824, after a long struggle engineered by a tailor, Francis Place, the law was at last repealed.

1824-1842 a period of unpractical idealism. Upon the repeal of the law against combinations the hopes of the workers soared. They had come to believe that by combination they might achieve everything for which they longed. A workman's paradise was to be instituted at once by the activities of unions, which were now at liberty to work in the open with no threatening shadow of imprisonment hanging over their leaders. Trade-unions sprang up like mushrooms overnight. On all sides there were strikes for higher wages. Unfortunately for the hopes of the workers a business panic occurred in England which forced the manufacturers to close their mills. All the strikes failed of their purpose, and many of the workmen could find nothing to do and were saved from starvation only by charity. Many of the unions broke up, and workmen lost faith in their organizations.

Formation of associations of trade-unions. In 1829 conditions in business were better, and the trade-union movement took a fresh start. Socialism was taking a strong hold on the minds of many of the workers. They began to believe that all production was largely dependent on labor and that the worker rather than the manager or the capitalist should enjoy the profits of industry. To achieve this end they entertained vague plans of taking over all the industries of the country. The faith that the simple trade-union could accomplish this was not yet restored. The leaders preached that concessions could best be won and ideals achieved by associations of trade-unions which should include all the unions in connected trades or, better still, all the workers in the country. One such contained lodges of cabinetmakers, plowmen, shearmen, bonnet-makers, engineers, calico-printers, and others. There should be a congress of delegates from the different unions which joined the association and a common treasury to which all should contribute and from which money should be furnished to assist those on strike and to publish a paper to keep members informed of matters of interest to them which the ordinary journal would not contain. One association after another was formed, each embodying some

of these features, but one after another they went to pieces. In some cases their failure was due to the determined opposition of the employers, in some to quarrels among the leaders or dishonesty of treasurers, and, more frequently still, to the inability of the unions to stick together and make sacrifices when the interests of others were at stake.

Although these associations suffered from many of the defects which were to be found in our own government before the Constitution was adopted, and were even more powerless to accomplish the objects for which they were formed, they took such a haughty and dictatorial tone toward the employers that the latter became thoroughly alarmed. In 1833 one of these associations, the Builders' Union, started a strike in Liverpool. The employers met and agreed not to employ any worker until he had signed a formal renunciation of the trade-union. Similar action was taken by the employers in the case of a strike in Manchester. For a time the hopes of the strikers ran high, but in the end both strikes failed, and the Builders' Union suffered severely. In the cotton-spinning mills similar action was taken by employers. When the union tried to force all the workers to join the union, the employers called on all their employees to give up the union. When they refused, the employers drove them from the mills and a lock-out ensued. Besides the lockout the employers were able to use the courts also in their struggle against their employees. Old laws which had been forgotten or were meant to apply to a different type of disturbances were used against strikers and agitators. In the courts the employers always had an advantage because the judges were of their own class and gave them a willing ear, while they listened with ill-concealed impatience to the plea of the workman. Unfortunately the strikers often resorted to violence and so laid themselves open to prosecution under the criminal law and brought their efforts into disgrace with the liberal statesmen of the time, who were naturally sympathetic toward them at first. Finally, some of their leaders tried to involve the unions with a movement for political reform known as the "Chartist movement," about which many of the members cared very little. By

the year 1842 many of the enthusiasts who, a few years before, had hoped to create an earthly paradise in England overnight lost faith in their vision, and a younger set of men came to the front who sought more practical if less lofty ends.

1842-1880 a period of moderation. After the year 1842 the idea of combining unions of different trades in a single great national association of all the workers lost favor. Instead, leaders sought to build up national organizations of the workers in each separate trade. The first successful association of this kind was the Amalgamated Society of Engineers, which was formed by the union of a number of local benefit clubs which had long existed among the engineers. The association was provided with an excellent constitution and employed a competent secretary, who had a permanent office in London. It also continued the payment of funeral benefits, a lump sum in case of accident, a sick allowance, an old-age pension, and out-of-work pay from the heavy dues which it collected from its members. This society was so successful that other trades soon followed its example, not only in organizing a national society but also in adopting a firm and businesslike form of government and paying various benefits. Practically all these unions were formed among skilled craftsmen, such as carpenters and printers.

The new spirit. The new form which the trade-union movement took was quite in accord with the new spirit which actuated the more progressive members of the trade-unions. The hope that the world could be transformed in a day or a year by the formation of labor unions had passed away. Gone, too, was the confidence that ends could best be obtained by violence among the men who were most influential in the central government of the national bodies, although it still lingered in the local organizations, especially in Sheffield. In its place was a spirit of intelligent reasonableness which looked to Parliament and public opinion rather than mob violence to right the workingman's wrongs. The socialist doctrines of Robert Owen had given way before the theory of competition as taught by Adam Smith and John Stuart Mill. The new spirit was one of moderation, and it aimed

to attain for the workingman those benefits which lay very evidently within the range of possibility and to attain these ends by legal means. The great aim of all trade-unions and all associations of unions has always been that of bettering the condition of the worker. The means by which this end is to be attained have varied from one period to another. In the period from 1842 to 1880 the leaders in power hoped to reach the end in view by (1) more education for the worker; (2) substituting arbitration for the strike; (3) working with the liberal leader of the county for laws which would give the workman the vote and also such rights before the law that he would not be unfairly hampered in his struggle with his employer. To further the education of the workmen, classes were formed, in connection with the unions, in which economic questions were discussed. To keep workers informed as to their line of work, trade papers were started. The unions also advocated the passage of bills which would make education compulsory upon all.

The leaders did what they could to substitute arbitration in place of the strike as a means of settling disputes between masters and men; they had in many of the associations a veto power on the right of the local organizations to strike, and this power they exerted to prevent strikes wherever possible. By an appeal to reason rather than violence they believed they could more effectually gain their point. Unfortunately the masters were still thinking just as they had thought twenty years before. The workman was still little better than a slave in their eyes; they expected him to do as he was told, ask no questions of his betters, accept criticism and cuffs in a humble spirit, and be grateful for his pay. That an organization of workmen should ask an employer to discuss with its representatives the number of hours his employees should work, the pay they should receive, or any other like question seemed to such men impertinence pure and simple. It was inconceivable to an employer that he could or ought to deal with his employees as a group. As long as employers continued in this state of mind, arbitration was impossible and strikes offered the only hope of redress.

In the field of the law the problem of the leaders of the national unions was a very difficult one. Fortunately they worked together, and they were able to find a few members of Parliament who were willing to interest themselves in their cause. Parliament had been altered by the reform measure passed in 1832, and it now represented the people of England better than it had in the eighteenth century. Still the craftsman had no vote. This was the first problem to be attacked. Partly through the efforts of the union leaders, the franchise was granted to the town artisan in 1866. After that the other legal reforms followed more easily, as the members of the unions soon learned to vote against any man who did not work for the bills which would remove the legal disadvantages under which they suffered. In this way, although they were not always strong enough to elect anyone whom they wished, they induced the candidate of one party or the other to do what they asked in return for their support which, in addition to the regular members of his party, was often enough to elect him.

In 1875 they managed to have the objectionable laws repealed. To understand just what this means it is necessary to see what the effect of these laws had been. Although it was legal for men to leave work all at once,—that is, to strike,—it was not legal for a workman to tell his employer that the men were going to strike, as that was threatening the employer. When men in an establishment struck, very naturally they were afraid that the employer would find other workers to take their places. To prevent this they tried to stop men going in and to persuade them not to work for their employer. This is called picketing. Sometimes they used threats and sometimes violence in picketing. A law was found by the employers which the lawyers interpreted to mean that if a striker so much as spoke to a workman who was taking his place he could be severely punished. These are only two examples of the way in which a member of a union could be punished for doing what any other man could do with impunity. It is easy to see why the leaders worked so hard for the repeal of such laws as these.

By 1880 the trade-unions were in a very different position from what they were in 1842. They had held together through good times and bad; they had won the confidence of the public by their honest and efficient management of their own business and the moderation of their behavior; and they had won for their members a fair chance with other men before the law. Trade-union leaders, instead of being regarded as little better than criminals, were now consulted by politicians and given places on school boards, in town and county governments, and some even obtained seats in Parliament. The working people of England were not satisfied, however, and by 1880 this discontent was beginning to change the whole trade-union movement.

Socialism and the new unionism. There were two reasons for this discontent: the first was the spread of the socialist ideas among the working people, and the second was the conservatism of the trade-unions. Socialism is a collection of theories in regard to the proper relations of human beings living together in society and of man to the things which are necessary to his life. These theories have varied from time to time, and if you were to ask five socialists what they mean by socialism, each might give you a different answer. The ideas which took hold of people about 1880 with the most force were the following: First, all land and other natural wealth belonged by right to the government because the government represented the people. The government should own and control all the means of production; the government should protect the standard of life for all, but especially for the workingman. That is, the land and mines in the hands of private owners should be taken over by the government, along with the factories, railroads, gas works, and other public utilities, and run with an eye to providing whatever the public needed at the lowest price while at the same time paying good wages to the workers for a short day's work. All the benefits which the unions paid should be paid by the government—accident payment, old-age pension, death benefit, and out-of-work pay. At the same time that such ideas were finding a hearing among the believers in more extended government action, the unions were barring from

membership any workers who were not sufficiently skilled to earn very good wages. The heavy dues which they collected and the large benefits which they paid made this the only sound policy for them. This left out of the union world all the laborers who needed help the most. At the same time the unions were growing more and more reluctant to enter upon a strike, and so they often avoided asking for shorter hours and better pay when the men wanted to make such demands and felt quite justified in doing so. The upshot of the whole matter was that many left the old unions, and many new unions were formed among both the skilled and the unskilled workers; in fact, it was at this time that labor unions, properly so called, sprang into existence. Strikes were carried to successful conclusion among the dock laborers and the match-makers, where no union had existed until the strike broke out. More unions than ever were formed, and the number of union members in the country greatly increased. For a time there were wrangles and quarrels going on constantly between the old and the new unions, but these settled down, and the new ideas permeated, to a large extent, the whole union movement. In 1900 the British Labor Party was formally organized. It is composed of unions, socialist societies, and other similar organizations. Largely through the efforts of the English government many of the measures advocated by the socialists have been enacted.

During the World War the moderate union leaders stood by the government, but they sometimes found it difficult to keep the more hot-headed of their followers in check. Strikes were frequent, and threats of strikes were more frequent still. In some cases the workers had ground for complaint. A few employers called upon their men to work longer hours than formerly, on the ground of patriotism, while they pocketed large profits from government contracts for themselves. In other cases men struck because the uneven rise in wages which always comes at such unsettled times gave them an apparent grievance. The engineers, for instance, found themselves paid less than unskilled laborers in munition plants. For a time the government yielded very readily to the demands of labor, but when the people generally, including

the more thoughtful labor leaders, were convinced that the grievance was more fancied than real, strikes were ended in short order by the authorities.

Effect of the Industrial Revolution on democracy. It is a very difficult thing to say just how far the industrial changes which we call the Industrial Revolution are responsible for the growth of democracy in England. The fact is that the years which have witnessed the great industrial changes have also seen the rise of a democratic government, and this would lead one to suppose that the two were connected.

In 1770, when the Industrial Revolution was beginning, only a small part of the population of England had the right to vote, and the representatives to Parliament were so distributed among the different parts of the country that many of the middle class who did vote had very little influence compared to the landowners. The king was able, by bribing some men and playing off one part against another, to have his own way very often. Such a situation was not destined to last long. In 1776 the king had his own way for the last time when he drove his American colonies to declare their independence. When the war that followed was concluded, Parliament became the real ruler of England. Unfortunately, as we have indicated, Parliament was made up largely of the great landowners and the powerful merchants of London and the other older cities. Beginning with the parliamentary reform of 1832, Parliament was gradually made quite as truly representative of the people of England as Congress is of those of the United States. Today, although she has a king, England has one of the most democratic governments in the world.

This political development was the result of many causes. It may be traced in part to the changes in the life of the people which accompanied the Industrial Revolution. No doubt the gathering of great numbers of people into cities, where they were sure to learn something from contact with new conditions and more people, has helped to spread the desire for self-government among the workers. No matter how bad factory conditions may have been in the first years of the Industrial Revolution, for the

last half century or more the workers have had more time to themselves and easier conditions of life than ever before in all history. It is never the most oppressed who seek to better their lot, but those who are intelligent enough to see how badly off they are. The growth of education and the reading habit have done much to spread democratic principles of government. If man were still obliged to clothe and feed the world by the labor of his hands, and so had no more time for self-government than in the Middle Ages, it is quite likely that democracy would never have reached its present strength.

Growth of the social consciousness. Another phenomenon of modern times has been the growth of the social consciousness. This is the sense of responsibility on the part of society for all its members and the sense of responsibility of individuals toward society at large. It is no new thing; in fact, it is as old as civilization itself. It found full expression in the teachings of Jesus. Of late years it has taken a hold on the thought of practical men, and it has found its way into business life as never before. Employers have been carrying this spirit into the conduct of their business by introducing all sorts of welfare work among their employees. Employees are insured by their companies, lunch rooms are equipped where meals are sold at cost to the workers, camps for summer outings are maintained, money is lent to those in need, lawyer's advice and medical help are provided free or at cost price. In these ways the more enlightened employers are showing their sense of responsibility for the welfare of those in their employ.

The government of England has shown this spirit more and more as it has become more democratic. Education for all the people is provided, medical attention is supplied to those who cannot pay, old-age pensions are granted, and innumerable laws insure against an increase on the profit of a business at the expense of the workers' well-being.

TOPICS FOR DISCUSSION

1. Give an instance in your own town where a new factory has demanded better transportation facilities.
2. Are trade-unions a benefit or an injury to the workers as a whole? to society?
3. Did the government of England show a sense of responsibility for the welfare of the worker before trade-unions existed?

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CHAPTER XIV

INDUSTRY IN FRANCE, GERMANY, THE LOW COUNTRIES, ITALY, SPAIN, AND RUSSIA IN THE EIGHTEENTH AND NINETEENTH CENTURIES AS COMPARED WITH ENGLAND

England was not destined to retain indefinitely the lead as a manufacturing nation which her early adoption of machinery had given her. It was impossible to prevent workmen from carrying out of the country the ideas of the new machinery and constructing more or less exact copies for the enterprising manufacturers of other countries. The ideas once given were improved upon. The native ability of each people enabled each to work up certain industries on the new lines better than the English themselves. In some countries the natural resources of the country fitted it better than England was fitted to engage in industries in which she had reigned supreme because of her exclusive possession of the new methods. We will now take up each country in turn and see how each adapted itself to the changed industrial conditions.

France, 1770-1814. In the year 1770 French industry was running downhill. For a century and a half the government had regulated industry down to the minutest detail. As the government did not contain any business men, it is easy to see why industry languished and almost died under the well-meant attentions which were intended to foster it. Over the excellent roads which the government had built little commerce went to and fro. In some parts of the country agriculture was carried on by the most approved methods of the time, while in others the conditions were those of the Middle Ages. In the south the raising and manufacture of silk was still an industry of great importance, as it

has been ever since. The great vineyards supplied all Europe with some of its choicest wines and contributed greatly to the wealth of the country. In the northeast flax was raised and fine linens and linen laces were made. Woolens of a high grade were also manufactured in France. The guilds still held their own, controlled and regulated by the autocratic government of the country. Far ahead of England in the sixteenth century, France was being outstripped by her island rival in spite of these old and well-established industries.

Effect of the wars on French industry. In 1789 the French Revolution began. Very soon France had involved herself in wars with most of Europe, and except for one or two short intervals she was not at peace again until 1815. During this period industry was much disturbed. Much of France's male population was called to the front, her commerce was seriously interrupted, and she suffered part of the time from a flood of worthless paper money. While England was becoming the workshop of the world, France could not even supply her soldiers with clothing. The period bestowed two benefits on the business of the country. By the Revolution many of the restrictions on trade and industry were swept away. This allowed the prompt recovery of the country when the war was over. Secondly, the large estates were broken up and divided among a great number of small proprietors who had every incentive to farm their lands to the best of their ability. This great number of small holdings is still characteristic of French agriculture and is taken as the explanation of the very high state of cultivation which marks the country.

France, 1815-1914. When the war was over the French found English goods both better and cheaper than their own. To protect the French manufacturer a duty was put on imports. The manufacturer lost little time in imitating the machines which the English used. France adopted the methods of her rival in the textile industry more quickly than any other country. To the cheapness and excellence of the English goods she added an artistic quality which made the high-grade French materials far more popular than the English wares of the same quality. In the

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realm of less expensive stuffs she did not attempt to rival England. Until the middle of the nineteenth century she was handicapped by a lack of coal, which was necessary to feed the steam engines. There were coal fields in the eastern part of the country, but they were not well developed until this time. This prevented her from doing much in the manufacture of iron and steel, which



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FRENCH VINEYARDS

require enormous amounts of fuel in their production, as well as hampering her in the manufacture of cheap textiles. In dyeing and bleaching, France showed her superior power to apply science to industry. Here she made advances on her own account which went far ahead of what the English had accomplished. In the course of the century she introduced all sorts of farm machinery and the improved breeds of cattle, sheep, and pigs.

Agriculture remains the most important industry of France. Wheat, potatoes, meat, and vegetables raised within her boundaries go far toward feeding her people in normal times. The beet

provides many tons of sugar, so that France is no longer dependent on the West Indies for her supply of this important commodity. Wine, silk, fine cotton and linen goods, lace, kid gloves, tapestry, and fine china are all associated in our minds with the name of France. Beautiful designs and fine workmanship mark her wares rather than cheapness and quantity. That sense for beauty and style which marked her products under a system of handicraft production makes her great under the changed conditions of today.

Germany, 1770-1914. Germany, which had been one of the foremost states of Europe in the Middle Ages in industry and commerce, had made but little progress during the mercantile period, and in 1770 occupied an insignificant place among the nations of Europe. This was due in large measure to political conditions. There was no such thing as a "Germany." There were two hundred and fifty German states held together in very loose confederation. These states were very badly governed by their autocratic rulers. Because of their weakness and lack of unity the country had been a battleground for two hundred years. While the general level of industry was very low, some states had made a little advance in agriculture, others in other industries. The more advanced states were in the central and western part of the country.

During the wars of 1791-1815 a large part of Germany was controlled by France. This had the effect of stimulating those industries which served the French armies, as France was producing little, and English goods were, in the main, shut out. After the war German manufacturers, like the French, found English competition hard to meet. They called upon their governments for protective tariffs which would make it impossible for the English to sell their machine-made goods for less than the German handmade goods could be sold. Such duties were imposed, but they did not serve to make the German states either very prosperous or very happy. It was a little like putting up a sand bank to keep out the rising tide of the ocean. Between 1815 and 1871, when the present German Empire was established, Germany

advanced but slightly in manufacturing. In mining and agriculture, however, she made more progress, although at the present time she is not the equal of England, France, or the United States in her agricultural methods. During this period the cultivation of tobacco was extensively introduced, and the sugar beet was grown on such a large scale as to render Germany largely independent of the cane sugar of the West Indies. Along the Rhine extensive vineyards continued to produce the wines which had long been famous. Most of the food of the people was raised at home, although some wheat was imported. Coal was mined to a considerable extent and sold abroad. Toward the end of the period some progress was made in the textile industries.

With the foundation of the German Empire in 1871 manufacturing leaped ahead. In 1914 Germany stood with England, France, and the United States as one of the four great manufacturing nations in the world. In the production of steel she had passed England and was second to the United States alone. In the production of cheap textiles, especially cotton goods, she ranked high. In 1914 German steel goods, German beer, German toys, German dyes, and a hundred other things "made in Germany" were sold everywhere in the world. How is it that in less than fifty years Germany had been able to build up industries which produced cheaper wares, and wares that were more attractive, than those of her ancient rival, England? The answer to this question is to be found partly in the policy of the new government and partly in the application of science and learning to the production of goods.

Policy of the new government. The newly founded German Empire was ruled by a very clever set of men who were determined to establish the reigning family firmly on the imperial throne and render Germany rich, powerful, and a mighty fighting nation. To do this they saw that the country must make the most of her natural wealth and develop industrially, so that her people might be prosperous and the government rich enough to build bigger and bigger guns and train more and more men against the time when she fell to fighting again. A protective

tariff was imposed, and at the same time bounties were offered to manufacturers who started new industries; merchants were encouraged to find new markets for German goods, and the banks were enabled to extend very extensive credit to merchants and manufacturers; treaties were made with foreign nations which would make German commerce easier; finally, the government tried to establish colonies which would supply the manufacturers with raw materials for industry and at the same time buy the manufactured goods which Germany has, of late, been able to produce in such vast quantities. These measures were all the more successful in that Germany had business men who were only waiting favorable conditions to advance themselves and their country. These men, although not men of great original genius, were clever at catching the ideas of other people and adapting them to their own needs. They bought English, French, and American machinery, studied it, and improved upon it. They also studied far more carefully than did the manufacturers of other nations the tastes of their customers, and made their goods to suit. If their customers wanted cheap goods they provided them, even if they knew they would not wear, and they put them up so that they looked attractive. To the English manufacturer this seemed very much like cheating. He persisted in making an article which he considered good and putting it up as he had been in the habit of doing.

Application of science to industry. More than any other nation, Germany made use of all that science discovered that could benefit industry. In other countries scientific men worked for the love of knowing the truth about nature, and business men paid little attention to them or their discoveries; in Germany the government offered generous rewards for improvements in industrial processes, and men of small means who had no opportunity to test out their theories were helped to do so. One example of the result of this policy was the development of the dye industry. By chemical processes the Germans have been able to manufacture an excellent dye at a very small cost.

Industrial education. Industry found at its service one other factor besides government backing, excellent business men, and noted scientists, and that was highly trained workers. The government made a serious effort to provide industrial training for that class of the population which were destined to earn their living with their hands. This not only enabled industries to produce more and better goods than would have been possible otherwise but it also helped the workers to earn a better living, and it greatly assisted the people to turn from an agricultural to a manufacturing nation without suffering as much in the adjustment as the English workers at the time of the Industrial Revolution.

The Low Countries, 1770-1914. The Low Countries, now Holland and Belgium, were separate states in 1770 as they are today. In the interval between 1770 and 1914 they were united for several years, part of the time under the French and part of the time under the Dutch king. In 1770 the fortunes of both were at a low ebb. Holland had lost much of her commerce and some of her colonies to England, and the industries of Belgium—then the Spanish Netherlands—had suffered severely from Spanish misrule. From 1794 to 1815 both countries were a part of Napoleon's French empire, and during this time industry as well as commerce suffered. It was not until 1830, when the two countries were separated once more and each was under its own ruler, that they made any great advance. From that time until 1914 both were very prosperous, each in its own way.

Holland and Belgium have this in common—they are both cultivated in a most thorough and efficient manner. While in Holland the emphasis is put upon dairy products, in Belgium a large quantity of grain is raised, as well as vegetables and flax. In manufactures Belgium far exceeds Holland. This is due to Belgium's abundant supply of coal, which provides fuel for her factories and enables her to produce iron and steel very profitably. Holland has very little coal. For this reason she has turned for her wealth to her East Indian colonies, which by careful management have become very productive; and the Dutch

look to them, and to the carrying trade in other people's goods which they have built up, for most of their wealth.

Italy, 1770-1914. In 1770 Italy was, like Germany, divided into a number of stupidly governed little states. The industry and commerce which had made the Italian cities great in the Middle Ages had fallen a prey to misgovernment and war. Annexed to France for a few years, Italy came out of her period of captivity little better off than when she entered it. It was not until 1860, when some of the northern states were united under a single ruler, that any great improvement took place. In 1870, when the whole peninsula was at last united under Victor Emmanuel II, modern Italy came into being. The new agricultural methods which England had adopted a century before were introduced by some of the larger landowners, factories sprang up, and railroads were built. Steamboats disturbed the quiet canals of Venice, Milan became a railroad center and factory city, and Naples a busy port. Romance and robbers gave place to the commonplace security of a modern state. Italy has one serious handicap—she has very little coal. Coal is desirable for many industries, but cheap coal and plenty of it is necessary for the manufacture of steel and iron goods. As we have seen, machines and railroads, high buildings and steamships, are all made of steel, and to import these things places a heavy tax on the wealth of a country, for the freight on them is a serious item in addition to the profits which the country producing them adds to their cost. For this reason Italy has not developed as fast industrially as her northern neighbors. The manufacture of silk and cotton goods are her most important industries outside of agriculture.

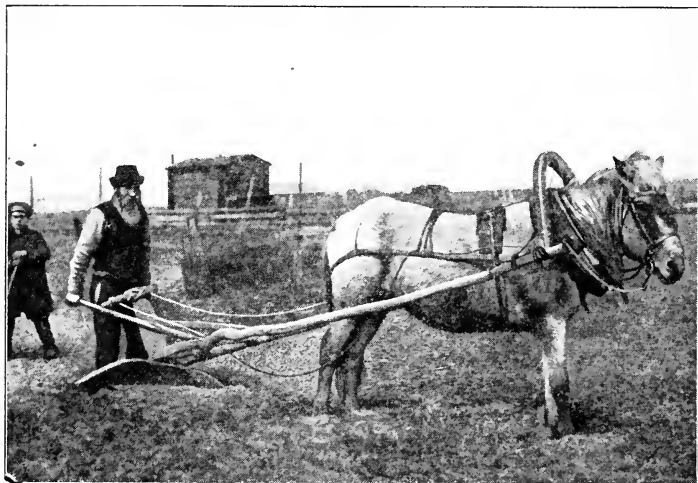
Spain, 1770-1914. Spain has gone backward to all appearances as far as manufactures are concerned. She has fewer silk looms than she had in the sixteenth century, and the making of cotton textiles has not made the progress with her that it has made in Italy. Her excellent iron and copper mines have been worked more extensively of late, but the ore is shipped to other countries to be manufactured. In the hills a very good quality of wool is raised, which forms one of her most important products.

Russia, 1770-1914. *Extent, population, natural resources.* Although Russia lies partly in Asia and partly in Europe she has been regarded as a European nation ever since Peter the Great made her face about toward the West. For the past two hundred years she has been influenced by European ideals and has played a more or less prominent part in European development, and it is probable that her part in European affairs will be much greater in the future than it has been in the past. To begin with, Russia is very large—far larger in territory and population than any other country of Europe. She also possesses very rich natural resources. These consist of great stretches of fertile land which under proper management may be made immensely productive, and rich mineral deposits which include coal and petroleum, both of them very valuable in developing a country industrially.

Russia, 1770-1815. In 1770 Russia was very backward indeed. She exported grain, hemp, and other agricultural products which were raised on the great estates of the Russian nobles, and imported from England most of the fine manufactured goods which the upper class required. A large part of the population provided their food and clothing and supplied all their wants by their household industries. In fact, economic conditions in Russia were very much like those in ancient Egypt except for the trade with England. Through this contact with England a small class of the people were kept in touch with a higher material civilization than their own, and through this small but steady stream of European goods which the trade brought in, more advanced ideas of industry were constantly filtering through the country. Napoleon tried to stop this trade in his attempt to force England to her knees by ruining her commerce, and for a short time it was interrupted. This interruption hurt Russia more than it hurt England and did much to turn Russia from an ally to an enemy of France.

Manufactures since 1815. Perhaps what Russia had suffered for want of English manufactures had frightened the statesmen of that country, or perhaps the wave of protection which was sweeping over Europe had caught them up in its onrush. Whatever

the explanation may be, the fact remains that Russia imposed high duties on imported goods after 1815 and indicated a desire to encourage home manufactures. Unfortunately for the ambitions of her statesmen Russia lacked many of the requirements for bringing about the Industrial Revolution. Her people were too ignorant to make good factory workers. Until 1861 many million of them were serfs owned by the nobles or the



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RUSSIAN PEASANT FARMING NEAR ARCHANGEL

Czar. Today many of the people cannot read or write, and the proportion was far greater a hundred years ago. There was little capital in the country which was free for investment. The great wealth of the nobles and the crown consisted of vast landed estates, most of the income of which was paid in grain, hemp, and the products of the household industries of the people just as it was in ancient Egypt. At the same time there was so much land to be worked that wealth and workers found plenty of employment there without the necessity of starting on new ventures. Even down to the present time the clothing of the farming population is spun and woven in the home from the flax and wool grown

on the farm, and most of their other wants are provided in the same way. The production of these household industries is so great that some of it finds its way into foreign commerce, and in our shops are Russian handmade linen, laces, and embroideries. There are factories in Russia at the present time, however, in spite of the disadvantages under which she has labored. Most of them have come into existence in the last thirty years. Compared to the development in other countries, Russia has progressed but slowly and is still a very backward country if measured by the amount of machine-made goods she produces in proportion to her population.

Agriculture. Russian agriculture has been very much affected by the fact that much of the land was held in large estates by the nobles and the crown. The serfs who belonged to the owners of the estates lived in villages and, for their own use, held plowland, meadow, and forest under a curious system of common ownership. Part of the time they worked on their own land, part of the time on the land of their master. After the serfs were freed, in 1861, they worked their own lands somewhat more efficiently, and the work they did for the lord was paid for in money or goods. On some of the estates the owners introduced those improvements which the agricultural revolution brought to England—a more thorough stirring up of the soil with plow and hoe, root crops, clover, and better breeds of live stock; on some the farming machinery made in the United States was introduced. The farms of the peasants were behind those of their masters, as they lacked both the capital and the intelligence to make improvements. With a few exceptions here and there the level of agriculture is still very low. Only one third as much grain is raised to the acre in Russia as in England, and the quality of the rye—the most important food grain of the peasant—is very much poorer than in England. Flax is raised in large quantities for export as well as for home use; its quality is much inferior to that grown in Belgium, however.

It is plain from this brief review of the economic development of the other countries of Europe, as compared with England, that

all of them, sooner or later, passed through the agricultural changes which occurred in England in the eighteenth century and through the Industrial Revolution which England saw in the end of the eighteenth century and in the nineteenth century. In many of the countries the Industrial Revolution did not take place until after 1850, and in some, such as Russia and Spain, it has not yet been fully accomplished. If we had time to look more closely we should find many of the results following these changes which followed them in England. Trade-unions; the spread of canals, steamboat lines, and railroads; a tendency toward democracy; the growth of cities; the increase of goods out of all proportion to the growth of the population; factory laws and other industrial regulation on the part of the government,—all these have appeared in every country in Europe to a greater or less degree. All these changes have presented problems to thinkers and statesmen such as the world has never been called upon to solve before. One solution of these problems is offered by the socialists, another by the followers of Adam Smith. In a democracy all the people are called upon to join in the solution of these problems, and as they perform their task wisely or ill they and their children will benefit or suffer in the future.

TOPICS FOR DISCUSSION

1. Why did the Industrial Revolution take place in England earlier than in any other country?
2. Why has the Industrial Revolution not yet taken place in Russia?
3. In what lines does France excel industrially?
4. If you were a large retail merchant to what places would you go to buy homespun linen, silk brocade, steel knives, handmade lace, toys?
5. Why had Germany made such rapid progress in industry and commerce between 1870 and 1914?
6. If a United States of Europe could be formed with a government similar to our own, what would be the effect on the market of the German, French, and Italian manufacturers?
7. Under present conditions what advantages has the American manufacturer over his European brother?

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CHAPTER XV

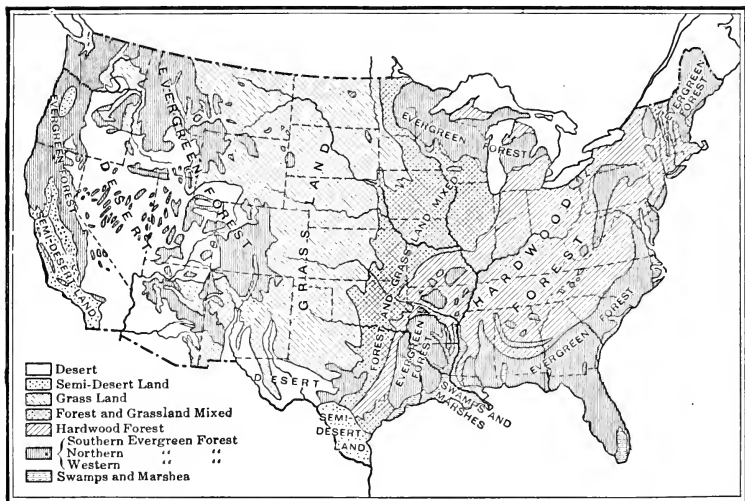
EARLY INDUSTRIAL DEVELOPMENT OF THE UNITED STATES: COLONIAL PERIOD

Before we take up the various steps through which the United States has passed in the years since the founding of the thirteen original colonies let us pause for a moment to consider where this nation stands economically among the nations of the world after three hundred years of growth. In the early twentieth century the United States is the greatest industrial nation in the world. This does not mean that she surpasses every other nation in every direction. Far from it. Her farms are not so intensively cultivated as those of England, France, or Belgium, though her farmers and farm laborers make a much more efficient use of their labor through labor-saving methods and devices. Until the World War broke out, Germany produced better and cheaper lenses and scientific equipment than were made in the United States, France a higher grade of cotton and silk dress materials, Ireland better linen; in fact, there is hardly a country that does not surpass us in some respect. On the other hand, the United States raises more corn, wheat, rye, oats, tobacco, and cotton and produces more petroleum, pig iron, steel, copper, and silver than any other nation in the world, and manufactures twice as much goods as her nearest rival, England. In many lines of manufacture, such as farm machinery, railroad equipment, and steel manufactures generally, this country stands first in quality as well as quantity of production. The total amount of wealth produced by the United States is greater than that produced by any other country, and the amount produced per capita is greater than that of any other nation. In the following pages some attempt will be made to explain how the United States has come to occupy such a favorable position in the world of industry.

Foundations of our economic greatness. *Fish.* The wealth and prosperity of the United States is not a gift bestowed by blind luck upon the country. It is rather the logical result of certain causes which are easily discernible. First of these causes is the great natural wealth of the regions which the United States now occupies ; the second is the energy and intelligence of the people who have come to live there. A third reason for the prosperity of the country is the wise policy of our governments, federal and state, in encouraging the spirit of free enterprise. The first resource of North America to be developed was the fishing banks. Even before the country was settled, French, English, Spanish, and Portuguese fishermen came every year to the shallow waters along the coast of North America to fish. The Newfoundland Banks were the favorite fishing ground in the sixteenth century, but in 1602 Gosnold visited Cape Cod and took home such stories of the abundance of fish in the neighborhood that the fisheries in that region began to assume importance. More recently the valuable fisheries between Cape Cod and Florida and the salmon fisheries of the Pacific coast have been developed. When we remember that Venice rose from a group of fishermen's huts in the marshes along the Adriatic to the greatest commercial city of her day, that the Hanseatic League began as a league of fishing towns on the Baltic shore, and that Holland grew from a wild province of fisher folk to commercial greatness we shall understand how full of meaning for the future of the country were the fish that inhabited the waters along the shores of North America. The fish not only gave the settlers food, they also provided a valuable export, and, most important of all, they led here as elsewhere to shipbuilding and to commerce.

Forests. The second great natural resource to be developed by Europeans were the forests. Even before Europeans settled here the word went back to England that great trees grew in the new lands beyond the sea, trees which would make most excellent masts for English ships. There were also other trees from which pitch, tar, and turpentine could be made. The forests were almost unlimited. The wooded region stretched all along the coastal plain

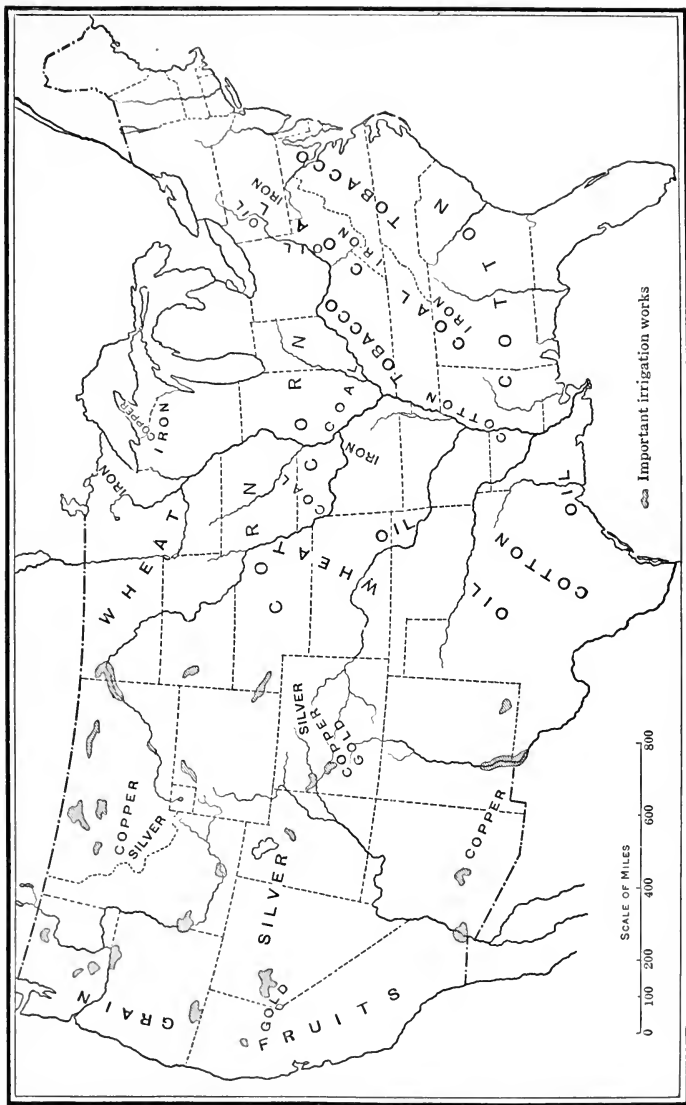
which bordered the Atlantic coast and back onto the hills and mountains of the highland behind. When the settlers came they found the forests of the utmost value. They provided the material for houses, as well as lumber and naval stores for export, and they also gave abundant fuel for household use and for the industries



FOREST, GRASSLAND, AND DESERT AREAS OF THE UNITED STATES

By Forrest Shreve. Published by the American Geographical Society of New York

which required it. Besides all this, they formed the home of fur-bearing animals, which were a source of considerable wealth to the colonists as long as the country was sparsely populated. Their skins were so valuable and so easy to transport that the freight on them to the European markets did not eat up all the profit as was sometimes the case with such products as lumber. As the United States spread westward, still more valuable forests were opened in Texas and in the northwestern states of Oregon and Washington, and these are still a source of great wealth to the country, although our need far outruns our supply.



THE MOST IMPORTANT MINERAL DEPOSITS AND AGRICULTURAL POSSIBILITIES OF THE UNITED STATES

Soil and climate. The third great source of wealth in the territory which is now the United States is the fertile soil which, combined with a favorable climate, makes possible the cultivation of excellent and varied crops. Wheat, rye, oats, hemp, and flax could all be raised from Maine to Georgia. On the newly cleared fields they prospered exceedingly. Before the land was sufficiently cleared of trees and underbrush to admit of planting such crops, the Indian corn, or maize, could be raised with very little effort. As the population moved inland from the coast they came to such fertile valleys as the Ohio and the Missouri. The Western plains were followed by the partial deserts of the Rocky Mountains, but even here, on many of the mountain sides, sheep may graze. Beyond lie the fertile valleys of the Pacific coast states, where as many as five crops may be gathered, one after another, in a single year. Little as we sometimes realize it, the cultivated fields of the United States are far more valuable than all the gold mines in the world.

Coal and iron in proximity. The fourth great source of wealth in this country consists of generous deposits of coal and iron, many of which lie close to each other. During the colonial days these deposits were little worked. Coal was harder to get at than wood. Charcoal, made from the trees that were constantly being cut down to clear the land, was the fuel to which the colonists were accustomed for making steel. Iron they did produce somewhat, at first for home use, later for export. Until well into the nineteenth century, however, coal and iron played little part in the growth of the country. This is all the more surprising, for in the twentieth century our very existence as a great industrial nation depends on these two natural resources. Without coal our industries could not keep running or our homes be kept warm; without steel, the product of the iron ore, we should have no machinery, no tracks for our trains, and no locomotives to run on the tracks. It was especially fortunate that the coal and iron deposits were close together in Pennsylvania. This made it possible to smelt iron at low cost and so start the iron industry much sooner than would otherwise have been done.

Petroleum, copper, silver, gold, etc. Although it is out of the question to enumerate all the sources of wealth which have been opened up in this country in the last hundred years, it is well to bear in mind that not all of the great countries of the world have been blessed with such varied resources as our own. Although England is rich in coal and iron she is dependent upon Russia, Rumania, Mexico, or the United States for petroleum, which we have in abundance. Gold and silver will not feed or clothe people, but they form a very convenient form of currency and one which modern nations can hardly do without. Here, too, we are better off than the mother country, as we have both in sufficient quantities to meet our needs. More copper, lead, and a dozen other minerals are found here than we require. Although we might have become a great industrial nation without these things, they have made our path far easier than it would then have been.

The people. We will all grant that nothing but a great physical change could make the Desert of Sahara a rich and productive country; at the same time we must also realize that natural resources do not alone make a prosperous nation. Look at Mexico. There one finds great mineral wealth of many kinds, exceedingly fertile soil, and a climate which runs from the tropical heat of the coastal region to an almost perfect climate summer and winter in the neighborhood of Mexico City; and yet at the present time Mexico produces in proportion to her population very much less than does the United States. We can account for this difference only by the difference in the types of people who settled in the two places and the institutions which they brought to their new home.

Very many different kinds of people have come to America, but there are two characteristics which are common to most of them—ambition and energy. Most immigrants have come to better their condition at the cost of considerable exertion. In the case of some the motive has been religious or political liberty; we may say of them that they wished to better their spiritual condition. In other cases the motive has been less lofty—the desire to

have better clothing, better food, and a better house to live in. In either case two very valuable qualities are present in the immigrant—a desire to rise and a willingness to work and meet difficulties to obtain that desire. A people possessed of these qualities is likely to create a prosperous nation. Although nearly every race on the globe is represented in our present population, the first settlers who most deeply marked the nation which they founded were English, and they brought with them their English ways. The governments which they established here were patterned after the political institutions which they had known in their homeland. There was this difference from the first: they copied the most liberal types with which they were familiar, and they made them more democratic as the years rolled by. In the same way their industrial institutions were modeled on those of England, but were adapted and modified to suit the new conditions. The England they left was the England of the mercantile period: the England of great merchant companies, expanding commerce, the passing of the guilds and the rise of the domestic system of industry, of common meadows and woodlands and open-field farming in one place and inclosures in another. It was an England where money was being used very generally in business transactions, and all values were reckoned in pounds, shillings, and pence. To the New World the colonists brought these institutions, although many of them were modified or entirely lost under the conditions of frontier life. For instance, guilds took no root because there was seldom more than one craftsman of a trade in each town. When there was little or no money in the colonies, barter came in again.

Economic needs of the settlers. The early colonists brought with them a standard of living which was that of the middle-class Englishman of their day, and this standard of living they were determined to maintain. Almost immediately they built themselves comfortable houses a story and a half high, with a great chimney and one or more large fireplaces for heating and cooking. There were windows, too, though they were often provided with oiled paper instead of glass. The settlers were used to a variety of

wholesome food and comfortable and attractive clothing and furniture, and they set about getting it as best they could under the new conditions. To have such things entailed far greater effort than had been required in the home country. If they were imported they cost a great deal, so that the buyer must produce a large quantity of something else to pay for them ; if he and his family attempted to make such things for themselves, they found this very hard work. In either case it required more effort, during the early days of the colonies, to maintain the standard of living here than in England. It is very likely that this may be responsible for the push and energy which foreigners often remark as a characteristic of the twentieth-century American. The determination of the settlers to keep to as high a standard of living as that to which they were accustomed gave rise to industries which would supply these wants and to a commerce with the mother country devoted to the same purpose, and in this way it had a very marked effect upon the economic development of the country.

Effect of the New World on the settlers. No matter how bravely the first settlers clung to their English traditions of living, the country in which they found themselves was sure to have some effect upon them. Nature here was still in the wild state. No cleared meadows, comfortable towns, varied industries, or market places served their needs. As far and as fast as they could they changed their conditions into those to which they were accustomed, but in the meantime they learned to use new foods such as maize, sweet potatoes, pumpkins, and turkeys. They learned to plant corn Indian fashion and to build canoes and to fight in the Indian way, too. By the new problems which they had to face they were obliged to think more than when jogging along a beaten path. They developed a resourcefulness which stood them in good stead. As labor was very high and servants were almost impossible to obtain in the North, the better class did more work with their hands than they were accustomed to. We all remember the story of John Smith's rule in the Virginia colony, that those who would not work should not eat. To the "gentlemen" who made up that colony at the time this rule must have seemed a very hard one,

and yet such necessities did much to break down the class spirit which was so strong in the England they had left. Thus the New World developed their intelligence in practical matters and made them hard working and democratic.

The period of hand industry. *Colonial period.* In that part of North America now occupied by the United States all forms of industry which we have studied have existed at one time or another. Before white men came the Indians were in the primitive stage. After the coming of the Spaniards the Indians of the Southwest became a pastoral people. Although the settlers brought the industrial habits and customs of the mercantile period, they were obliged by the conditions which they found here to return to earlier, even primitive methods of industry in some cases. Household production was revived; the plantation, very much resembling the manor, appeared; and the small craftsman's shop played an important part in the business life of the cities. The domestic system, which was in full swing in England when the colonists left, did not develop in this country to any great extent until the end of the colonial period and the early nineteenth century, when it was rapidly disappearing in England.

We shall make no attempt to study primitive industry in this country either as it existed among the Indians or in the frontier settlements. Since white men came to this country industry has passed through two main stages—the period of hand production and the period of machine production. The first of these periods may be said to have begun with the settlement of Virginia in 1607 and to have lasted until 1810, when the Industrial Revolution reached this country. This period includes the colonial period, the Revolution, and the early days of the Republic, and for the sake of convenience we will follow those lines of division. The second period is broken into two almost equal divisions by the Civil War, which wrought almost as great changes in our economic as in our political life.

Economic conditions in Europe encouraged settlement of America. *Demand for precious metals.* Before we take up the history of the colonists after they came to America it is interesting

to inquire why they left Europe. We shall not go into the religious and political motives which drew them to this country, but confine ourselves to the economic causes leading to the settlement of the country. The first settlement, that in Virginia, was made with the object of enriching the company which established it and the people who came here under its auspices. That company, like many others of the time, was looking for opportunities to trade. The members hoped to find gold and silver mines in Virginia as the Spaniards had found them farther south, or at least to establish a trade with the Indians which would bring to their ships valuable products of the country. The hunger for the precious metals was very keen in Europe. There had never been a very large supply there, and since the use of money made of gold and silver had become very widespread that supply had proved entirely inadequate to meet the needs. This greed of gold had led the Spaniards to conquer the southern part of the New World and close it against all comers in the century immediately following Columbus's discovery. When the English entered the field after a hundred years of delay, there was only North America left to them. Knowing very little of the actual condition of the country, they hoped to repeat the experience of the Spaniards farther south. Although the search for gold mines in Virginia was hopeless, in time the settlers discovered even greater sources of wealth in the tobacco crop than they had hoped to find in the mines.

Land hunger. The desire for precious metals had been largely responsible for the conquest and settlement of South America and Mexico by the Spaniards, but it was not the leading motive with the English. Even those who came to this country for distinctly economic reasons were led here by the desire to possess land quite as much as by the hope of finding mines. During the Middle Ages the population of most European countries had remained very nearly stationary. Owing to the unsanitary way of living severe plagues had carried off many of the inhabitants every few years. The frequent wars had accounted for some more, and the hard conditions of life had prevented any but the most robust from

attaining maturity. In the mercantile period better conditions prevailed and the population increased. More people in England meant a greater demand for land. At the same time inclosures for sheep-raising had limited the land available for agriculture. Farmers who found it impossible to hire farms for any price that they could afford to pay turned to the New World, where farms could be had for the clearing.

Fish. Not only the land but also the sea drew Europeans to America. Fish have a most unaccountable way of changing their habitation. In the early Middle Ages they were very plentiful in the Baltic Sea, and by their presence there Hamburg and Bremen rose to greatness. In the course of time they deserted that region for the North Sea, and immediately the Dutch fishermen began to grow rich. Although this is still an important fishing ground, by the sixteenth century fishermen of several nationalities were looking for a better place to ply their trade and were finding what they sought off the coast of North America. Each year the fishing fleets came over, caught their fish, salted and dried them on the most convenient shore, and returned with their valuable cargoes. In time they thought it worth while to put up huts on the shore for use during the drying season, and eventually some permanent fishing villages grew out of these temporary settlements. Although none of these settlements were of any great importance in themselves, the fishing industry which was going on here when the Puritans came to New England helped them to get their colony started. It drew some fisher folk to the colony. The fishing fleets also provided a market for the farm products of the colonies, especially such products as flour, bread, and meat.

Commerce. There is one other condition which was even more potent than either land hunger or the desire for gold in bringing about the settlement of the country: that was the expanding commerce of the time. Without it there would have been no ships capable of serving the settlers after they got over here and no interest in this country as a possible market and a certain source of raw material for industry. It is quite impossible to imagine the settlement of America taking place in the Middle

Ages, for this single reason—that the commerce of the time would have made it neither desirable nor possible.

How did the first colonists pay for their imports? When the colonists got over here they began to realize as they never could in their homes in England what a wilderness meant. If they wanted a knife or a plow or a kettle or a needle they must send to England for it. And they must send back something to pay for it, too. Some of them had money in England, and those could write to the managers of their property and tell them to buy the goods and charge them against the income from this property. Some of the companies which sent out colonists continued to supply the settlers with tools and even food and clothing for a time, but their patience at last gave out, and they demanded in no uncertain terms that return cargoes be sent. Many of the settlers had spent all that they could get together in coming to America, and they were obliged to look about them for something to send back to England to pay for the imports that were so sorely needed. One of the easiest things to send back was lumber, for it grew everywhere and might be had for the cutting. Both Plymouth and Jamestown sent a shipload of lumber among their very first exports. Furs and fish were the next easiest to get at, but the fish must be caught and that took time; and the furs must be traded from the Indians, and that trade was not always quickly brought about. However, both were more profitable than the lumber, which, when sent as far as England, cost so much in freight that the profit remaining was very small. As more civilized conditions obtained in the colonies, farming, a little mining, and such industries as shipbuilding and the manufacture of rum paid for the manufactured goods which the country continued to import in large quantities to the end of the handicraft period.

Industrial conditions in the colonies in general. As far as their industrial conditions go the colonies fall into three divisions—the New England colonies, the middle colonies, and the Southern colonies. In each of these divisions certain natural features of the country led to industries and a commerce different from that of its neighbors. For this reason each of these divisions must be

taken up separately. On the other hand, there were certain characteristics which were common to all the colonies, and of those we shall speak first.

Abundance of raw materials. In all the colonies there was a great abundance of raw materials for industry. We have spoken of the extensive forests which offered material for lumbering, the making of naval stores, and the building of ships. In most parts of the colonies the soil was so rich that even the crudest agriculture yielded generous returns. And there was plenty of land for all. The rivers and bays as well as the ocean were full of fish to be had for the catching. Iron ore in the form known as bog ore was very accessible in small quantities, and at a greater depth from the surface the ore was to be found in immense amounts. Such conditions presented a very favorable opportunity for the establishment of industries. Unfortunately there were disadvantages to balance these advantages. To establish any industry—such, for example, as the manufacture of knives and other hardware—on the scale on which it was carried on in England required not only iron ore and fuel but also skilled workmen for each part of the process, an extensive market in which to sell, and large capital. All these were lacking in the colonies at first.

Scarcity of labor. Labor, especially skilled labor, was very scarce. And the very abundance of land and fish and lumber was largely responsible for this. It is true that few of the laboring class came over at first, but even when they did come many of them did not continue to work for hire very long. In England the sources of raw materials were controlled by the landowners. A landless man was dependent upon the labor of his hands for a living. He sold his labor as best he could, but as the population increased it became more and more difficult for him to sell that labor to advantage unless it was skilled labor. This very naturally led fathers who could afford it to apprentice their sons, so that the latter might have skilled craftsmanship to offer in the labor market instead of muscle power. In America land was so cheap that any laborer could earn enough in a very short time to buy all he needed on which to raise food and clothing for

himself and his family. By applying his labor directly to the land he was sure of a decent living; at the same time he was more independent than if in another's pay. There was a certain dignity attached to landowning, too, which made farming especially attractive to most men. As a result of these conditions the craftsmen who came here ceased to ply their craft except as a side issue in connection with their farming. For instance, a weaver who had taken up a farm might weave for his neighbors in the winter, when there was little to do out of doors, but industry carried on in this way served only a small community and did little to build up in the colony a cloth manufacture of any account which would supplant the need of fine imported cloth from England. Frequently the craftsman let his craft die with him, for it was hardly worth while to train his son in his craft when it formed so unimportant a part of his own means of livelihood. It is probable that the number of skilled craftsmen in proportion to the population actually decreased during the seventeenth century, in spite of the fact that in a few districts numbers of Scotch-Irish weavers and German potters came over and started these industries on a considerable scale. In the eighteenth century, when towns of some size had grown up, the tide set the other way; more craftsmen came over, and more attempt was made to train apprentices.

Methods of meeting the scarcity of labor. Various methods were employed to remedy the scarcity of labor in the colonies. One method was to import skilled labor. When capitalists, who were usually Englishmen or Germans who had no very close knowledge of the country, wished to start an industry on a large scale they coaxed or bribed skilled workers to emigrate to America. This seldom proved successful, for it was hard to get enough workers, and even at the high wages paid them they were seldom content to keep to their trade as employees. A second method was for a planter or other employer to pay the passage of a worker who was legally bound to serve him for a certain number of years in return for his passage money. These people were called indentured servants, and their term of service often ran for five or

seven years. When they were free they often worked for a few years longer to get together a little equipment of farming tools or the like, and then set out for themselves. These people were seldom craftsmen and so only supplied the need for unskilled labor. A third method, which was the only sure way of obtaining permanent help, was to purchase slaves. This was resorted to in the Southern colonies, where there was a great need for unskilled labor. Slaves were owned to some extent all over the country. Household servants and farm laborers in New England and the middle states were often from this class. For certain lines of work the slave was of little use; he had come from a primitive civilization, and it was difficult to train any but the very exceptionally intelligent negro for a craft. So slavery also still left the problem of skilled help largely unsolved.

Effect of scarcity of labor on industry. The scarcity of labor had a very marked effect upon colonial industry. The introduction of the manufacture of fine textiles, steel ware, pottery, fine furniture, silver plate, and jewelry was rendered very difficult for want of skilled workmen. At the same time the high wages demanded by unskilled workers greatly encouraged the invention and use of labor-saving devices. The sawmill was largely introduced in this country before it was used to any extent in other countries; by means of it the colonists so reduced the cost of cutting up their lumber that they were able to compete in southern Europe and the West Indies with the nations of northern Europe. It was the high cost of labor which also led to the invention of the cotton gin.

Limited free capital. Manufacturing as it was carried on in Europe required a considerable capital. To start the manufacture of glass in the colonies, for instance, necessitated the importation of skilled workmen—an expensive matter. Although there was no machinery to buy such as a modern enterprise demands, there must be furnaces built, the native sands and clays must be experimented with to determine their fitness, and the goods produced must be held until a market could be secured for them. All this meant that the person who started such an industry must have

twenty-five thousand dollars or more to carry his venture to a successful conclusion. Other industries did not require quite so much, but any venture which aimed to rival similar establishments abroad either in size or in the quality of the output made heavy demands on the resources of the promoters. There were few very wealthy men in the colonies, and those there were found investment in land or in ships and a merchant's stock of far more immediate profit than investment in a pretentious industrial enterprise. Men of smaller means found any surplus which the year's work left them much needed in the improvement of their farms and farm buildings. For this reason they seldom had any money which was seeking investment. In consequence it was next to impossible to sell them shares of stock in industrial undertakings. Such ambitious ventures as were started were financed by English or German capital. Many of these were failures because the promoters did not understand American conditions. Such failures discouraged foreign capitalists from embarking in other undertakings here which might have been successful.

Limited market. If the shortage of skilled labor and capital in the colonies had been the only obstacles to establishing the manufacture of fine goods, the enormous prices charged for imported wares would have led business men to overcome that difficulty. Industrial development was further hindered by the protective laws which England had set up to guard her own manufactures. Goods manufactured in the colonies must be sold either there or in the West Indies because of the trade laws of England. As there were many restrictions hedging about the West Indian trade it was next to impossible for the colonies to sell fine manufactured wares there. In the colonies themselves the market was limited and uncertain. To begin with, there were very few people who could afford to buy the finer grades of goods. If we examine the following table of population increase and remember that in 1775 half a million of the number given were blacks, who consumed very little that they did not produce, we shall see another reason why it did not pay to start industries on a large scale.

POPULATION OF THE UNITED STATES

1688	200,000
1740	1,000,000
1765	2,000,000
1775	2,743,000
1790	3,929,214

Although most of this population was gathered along the seaboard on the numerous harbors which indent the coast, or on navigable rivers, very soon the movement inland in search of better farm land began. The settlements were too small and the distances between them too great to permit of any road-making worth mentioning. Until the last part of the eighteenth century wheeled vehicles were little used outside the larger towns and their immediate neighborhood, and in many parts of the country the Indian trails and the tracks worn by horses and cattle answered the purpose of roads. Under these conditions the cost of getting goods to the people here was great. Industries sometimes started up, supplied the neighborhood with their wares, and then closed down because there was no more demand near enough so that the freight would not eat up all the profits.

Currency. The English colonies were barred from imitating the mother country industrially by still another difficulty—there was no satisfactory system of currency here. In Europe in the mercantile period business was carried on by means of a reliable metallic currency. Before the colonists left England the government had learned by sad experience that coins must all be made of the same fineness of silver and of the same weight. If the government guaranteed to the people shillings that always contained the same amount of pure silver in them, tradesmen need not weigh and test every shilling before they accepted it, and when men talked about prices in shillings they knew what each other meant. A man was willing to lend money, for he knew that when he was paid back, the money he received would be worth as much as the money he had lent. If a manufacturer bought raw materials and labor and turned them into manufactured goods, he was sure that the shillings he received for those

goods would be as valuable as the shillings he had paid out, and he was sure of this not because the coin bore the government stamp but because the silver it contained would be worth neither more nor less. Silver does not go up and down in price as rapidly as wheat and cotton and steel do. In those days it fluctuated even less than it does now. Unfortunately the colonies had no silver mines, and all the coins they had must be imported. At the same time there were so many other things that they wanted to import that they did not keep themselves well supplied with money. Instead they tried all sorts of experiments for getting along without metal coins. In the South tobacco answered in the place of money. A minister was paid so many pounds of tobacco a year by his congregation; taxes were collected in tobacco; and values of all sorts were reckoned by this measure. In a good tobacco year the commodity was cheap. The minister found that his salary would scarcely buy him enough food and clothing to last the year out. In a bad tobacco year his income was more than sufficient, but his parishioners were groaning over the assessments which they were called upon to pay. In good years people rushed to pay the debts they had contracted when tobacco was worth much more. In the New England colonies various commodities were used for money at one time or another, among them wampum, a kind of shell bead much in favor with the Indians, from whom the colonists could always buy beaver skins if they had wampum to offer in exchange. One of the worst things the colonies did was to make paper money without any security back of it. At the present time the paper money which we use represents something of value, and we know that if we choose we can go to the treasury and get gold for it. The colonial paper money, like some that the United States has issued since, was not redeemable in coin. At first it passed from hand to hand because the government agreed to take it in taxes, and people thought it was all right. When someone tried to buy goods from England with it he found that no English merchant would take it, and no one in the colonies was willing to give him a silver shilling for a paper one. Then he began to offer more

than a paper shilling for one of silver. Immediately when that happened paper money had started on its downward path. Silver was preferred to paper, so no one would sell as low for paper as for silver, even here. There came to be two prices for everything—a lower price to the person who paid in silver and a higher to the one who paid in paper. With the currency in such a state as this many people went back to the old system of barter. We find one doctor, for instance, who kept a careful account book and each year rendered a statement to each of the persons with whom he had dealings. Against these persons he charged the services which he rendered them and credited them with whatever he owed them. One of the most amusing entries among the credits is this: "4d for chasing a calf and not catching it." It was his custom to employ on his very excellent farm persons who were in debt to him and not likely otherwise to pay what they owed. It is interesting to find that in his expense book all the values were reckoned in shillings and pence, although very little money actually passed from hand to hand. As a result of the poor currency system the colonists had been driven back to the more clumsy system of exchange,—barter,—and the accumulation of free capital was made difficult again. The effect of this on industry was to retard its development on a large scale for want of capital.

Industries established. In spite of all the difficulties which the conditions we have described presented to the establishment of manufactures, some were started, and some of those that were started flourished. A very considerable shipbuilding industry grew up in New England; the milling of flour, the baking of bread, and the smelting of iron were important in the middle colonies, and the making of tar, potash, and turpentine in North Carolina. These industries all produced goods in quantity for export. On a somewhat smaller scale were the manufacture of rum, shoes, and linen, and in New England the salting of fish. The making of bricks, pottery, woolen goods, the tanning of leather, the sawing of timber, and the making of nails were carried on in nearly all the colonies to some extent, although in the South there was

far less manufacturing than in the middle and northern colonies. Most of these industries were very limited in the seventeenth century, but grew to greater importance as the eighteenth century brought a rapidly increasing population to form a market for the products. We will discuss each industry more in detail as we take up the colonies with which each was especially associated. Always we must bear in mind that throughout the colonial period by far the greatest industry in the country, North and South, was farming.

TOPICS FOR DISCUSSION

1. What natural resources made the present economic greatness of the United States possible?
2. Give economic reasons for the colonizing of North America.
3. What prevented the settlers from bringing their industrial system with them?
4. Compare conditions in the colonies with conditions in medieval England.

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CHAPTER XVI

HANDICRAFT INDUSTRY IN THE COLONIES

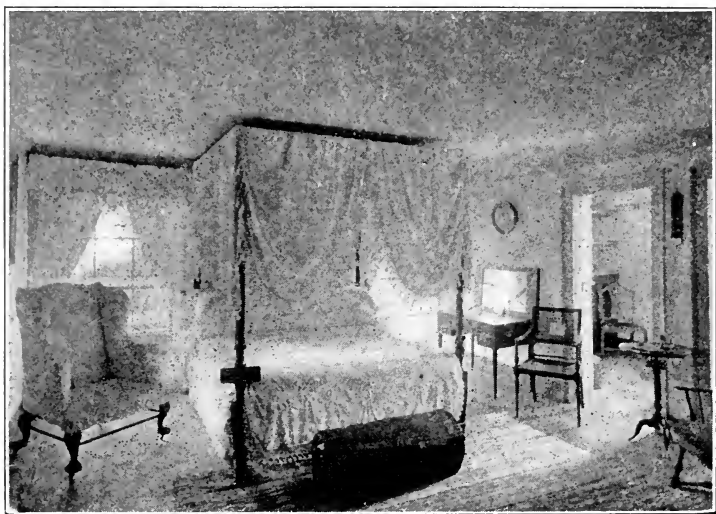
The Southern colonies. The first permanent English settlement in America was made at Jamestown, Virginia, in 1607. The rest of the Southern colonies—Maryland, North Carolina, South Carolina, and Georgia—were not founded until after the Dutch had come to New York and the English had established Plymouth and Boston. On account of the pioneer position of Virginia, however, the Southern colonies should be taken up first. The south Atlantic seaboard, like the region farther north, consisted of a wide coastal plain with a mountain region back of it. The district was well wooded and yielded timber and naval stores. In North Carolina these gained greater importance than in the other colonies, where agriculture soon took first place. For agriculture the Southern colonies were especially fitted, as the soil was rich, the summers long and hot, and the winter mild. In all parts of the South the necessities of life were raised by each household for its own use. Wheat and corn, cattle, hogs, and sheep, a little cotton, some fruit trees and grapevines, and a vegetable garden furnished the food and the coarse clothing of the family. After trying various experiments the Virginians discovered that they could easily raise tobacco on the rich, newly cleared lands and that fashion was creating a great demand for this product in Europe. As the supply of tobacco increased, the custom of smoking it spread in Europe; and the more the Virginians raised, the more they could sell. In this way the price of tobacco kept up very well, and as the newly cleared soil produced large crops with comparatively little cultivation, the planters prospered. The tobacco crop differed very much from the other products of which we have spoken. These might be called sustenance crops, while the tobacco was a commercial crop. It was produced to

satisfy, not directly but indirectly, the wants of the people who produced it.

Effect of tobacco on industry. The effect of the cultivation of tobacco on the development of industry in the colony was very great. It was so easy to exchange tobacco for English-made cloth, furniture, and tools that there was little inducement for anyone to make such things in the colonies. Each well-to-do planter had in England (usually in London), an agent, or factor, as he was called, who attended to his business there for him. To this factor was shipped the yearly crop of tobacco to be sold, and from him the planter ordered from time to time through the year such goods as he wanted. These orders included every sort of thing, from a thousand-dollar spinet to a satin waistcoat in the newest fashion. The accounts ran from year to year: in the years of good tobacco crops the balance was in the favor of the planter; in poor years, of the factor. Many of the plantations were situated on streams, so that the ships that brought the English goods landed their wares at the planter's own wharf and loaded the tobacco there. This trade made it possible for the Virginian to do without any other currency than the tobacco which his fields produced, and it also reduced the transportation problem to its simplest form. Under such circumstances it is not hard to see why the manufacture of fine goods was not set up in the colony, in spite of the effort made from time to time to encourage it by the colonial legislature. On the other hand, it must always be remembered that most planters, as well as the smaller farmers, produced in their own households the great bulk of the necessities of life. In the Carolinas and Georgia the rice and indigo crops had much the same effect upon industry as the cultivation of tobacco in the larger and more important colony of Virginia. Maryland greatly resembled Virginia in her industry, although she was also influenced by Pennsylvania, her neighbor on the north.

The plantation. The cultivation of a commercial crop, whether it was rice, indigo, or tobacco, gave rise to plantations and discouraged the growth of cities as well as manufacturing enterprises. A plantation was a tract of land of five or six thousand

acres in extent consisting of cleared fields, woodlands, gardens, and a great house and group of farm buildings about it, all owned by one man. In the great house lived the master and his family, and in the buildings about it his servants and slaves, horses, sheep, cattle, hens, and doves. Besides the shelters for man and beast, there was a separate cookhouse, a weaving-house, a dairy (where



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WASHINGTON'S ROOM AT MOUNT VERNON

Most of the furniture belongs to the late colonial period. Some of it may have been imported. Before the Revolution Washington was constantly sending to his agent in England for clothes and furniture

butter and cheese were made), a blacksmith's forge, a smoke-house (where meat was cured), tanning vats, and possibly a country store, where goods of all sorts—both English-manufactured and homemade—were exposed for sale. Besides the master and his family the population of the plantation consisted of white servants—sometimes hired but more often indentured—and slaves. The whole might number anywhere from ten or twelve to several hundred persons, depending upon the wealth of the owner and the

extent to which he attempted to supply the wants of himself and his household on his own estate. If he devoted his whole attention to the cultivation of tobacco, even the clothing and shoes of his slaves might be imported—the cloth from England and the shoes from some New England coasting vessel peddling goods down the



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COACH HOUSE, SPRING HOUSE, WEAVING-HOUSE, CARPENTER'S SHOP,
ETC. AT MOUNT VERNON

coast on its way to the West Indies. This was the exceptional case. If a planter attempted to supply from his plantation all but the fine wares required by his immediate family, he must employ much more help. For instance, Colonel George Mason, who lived in the latter part of the eighteenth century, had no less than five hundred persons on his estate. He raised great quantities of grain, as well as tobacco, and once sent as much as

twenty-three thousand bushels of wheat from his own wharf in a single shipment. His son writes as follows of him:¹

It was very much the practice with gentlemen of landed and slave estates . . . so to organize them as to have considerable resources within themselves ; to employ and pay but few tradesmen, and to buy little or none of the coarse stuffs and materials used by them. . . . Thus my father had among his slaves carpenters, coopers, sawyers, blacksmiths, tanners, curriers, shoemakers, spinners, weavers, and knitters, and even a distiller. His woods furnished timber and plank for the carpenters and coopers, and charcoal for the blacksmith ; his cattle killed for his own consumption and for sale supplied skins for the tanners, curriers, and shoemakers ; and his sheep gave wool and his fields produced cotton and flax for the weavers and spinners, and his orchards fruit for the distiller. His carpenters and sawyers built and kept in repair all the dwelling houses, barns, stables, ploughs, harrows, gates, etc., on the plantations, and the outhouses at the house. His coopers made the hogsheads the tobacco was prized in, and the tight casks to hold the cider and other liquors. The tanners and curriers, with proper vats, etc., tanned and dressed the skins as well for upper as for lower leather to the full amount of the consumption of the estate, and the shoemakers made them into shoes for the negroes. A professed shoemaker was hired for three or four months in the year to come and make up the shoes for the white part of the family. The blacksmiths did all the ironwork required by the establishment, as making and repairing ploughs, harrows, teeth, chains, bolts, etc. The spinners, weavers, and knitters made all the coarse cloths and stockings used by the negroes, and some of the finer texture worn by the white family, nearly all worn by the children of it. The distiller made every fall a good deal of apple, peach, and persimmon brandy. The art of distilling from grain was not then among us, and but few public distilleries. All these operations were carried on at the home house, and their results distributed as occasion required to the different plantations. Moreover, all the beeves and hogs for consumption or sale were driven up and slaughtered there at the proper seasons, and whatever was to be preserved was salted and packed away for after-distribution.

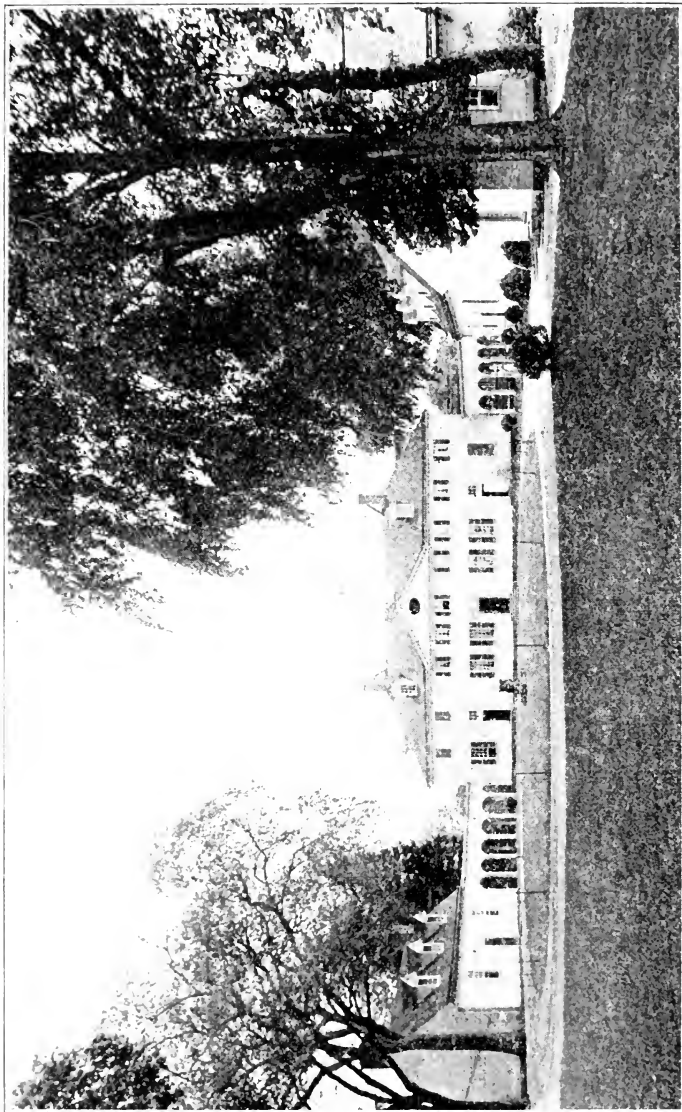
In reading this account we must remember that Colonel Mason was a very rich man and that he belonged to the end of the period we are studying and not to the beginning. His style of living

¹ Miss Rowland, *Life of George Mason*, Vol. I, pp. 101, 102.

was very much like that of George Washington at his home at Mount Vernon. In the seventeenth century no such great households existed. One should also bear in mind that the coopers, blacksmiths, and other craftsmen to whom reference is made could not compare in skill with the highly specialized craftsmen who bore the same name in England. And the goods they produced could not stand comparison with the English product, either. Otherwise this account gives a very good idea of the household industry which was carried on in the South.

We are struck at once by the similarity between a plantation and a manor. Both were extended households which to a great extent were self-sustaining. In both cases the use of money, either within the household or in the relations of the household with the outside world, played a small part. The use of finely wrought goods produced under a more advanced system of manufacture was greater on the plantation than on the manor, for the reason that such wares were to be found in the world of the seventeenth century and not in the Middle Ages. Also the relation of the master to his workers was very different. It is interesting to see that people of a more advanced stage of economic development will revert to earlier forms of economic organization when conditions are ripe for it. The conditions which had produced the industrial organization of the mercantile period—a growing population, the use of money, an expanding commerce, protected and encouraged by a strong and well-centralized national government—were lacking in the South; on the other hand, extensive lands which might be profitably farmed by very crude methods, poor transportation systems, and a very scattered population brought into being the form of economic organization which had arisen in Europe when conditions there were much the same.

Besides the planters and their families there were in the South small farmers whose households resembled the plantations, only on a much smaller scale. There the farmer's wife was spinner, weaver, and dairy maid, and the farmer was cooper, sawyer, cobbler, and what not. Besides these there were some people who made a living by Indian trading, some by making tar and



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WEST VIEW OF THE MANSION AT MOUNT VERNON, VIRGINIA

On one side is the butler's house and on the other the kitchen. Each is connected with the main house by a colonnade

turpentine, some who went from plantation to plantation plying their trade, such as skilled shoemakers and tailors. Peddlers carried their goods, packs on their backs, through the country. In Baltimore and Charleston there were merchants of some prominence who collected and exported colonial wares and imported and distributed European goods. Here and there brick kilns and flour mills as well as tar kettles gave evidence that manufacturing was not entirely dead.

Commerce. When we consider commerce in the South two facts stare us in the face,—there were no cities, with the exceptions of Baltimore and Charleston, where goods could be gathered and from which they could be distributed, and there were no roads over which they could be sent. This does not mean that the lack of roads and towns prevented commerce. It signifies rather that there was no commerce of a kind to call into being roads and towns. What commerce there was consisted of a direct transfer of goods from the wharf of the producer to the ship of the merchant. In some cases this merchant was a New Englander or a Southerner, but very much more often he was an Englishman. Of exchange between different parts of the South such as a variety of industries would have called forth, there was almost none, and what little existed was carried on by the ships of which we have spoken, or by the peddler. The South more nearly than any other part of this country fulfilled the English ideal of a colony. It supplied goods which could not be produced in England and furnished a ready market for the manufactures of the mother country.

The middle colonies. *Geography.* The middle colonies—New York, New Jersey, Pennsylvania, and Delaware—were blessed with a soil very nearly as fertile as that of the South. On the other hand, the climate was colder and the season shorter than in the Southern colonies. The same crops grew there that grew in Europe. This made it possible for the colonists to raise what they needed to supply their own wants, but it gave them no agricultural product for export to the mother country. As a result, small farms rather than large plantations were the rule. A number of excellent harbors situated at tidewater on navigable rivers formed

most natural and convenient trading posts. The trade which centered at those places led to the development of towns, which, in turn, gave rise to manufacturing on a small scale. So the middle colonies became the homes of numerous small farmers, commerce flourished, and manufacturing for local needs grew up in the towns and villages.

Fur-trading and forest industries. New York was started by the Dutch with the distinct purpose of founding a trading post such as all nations were fond of holding in a distant country. Store-houses were put up at what are now Albany and New York, and just enough Dutchmen were left there to guard the interests of the company and collect furs from the Indians. Although the settlement grew far beyond the little trading post for which it was founded, the fur trade which had been responsible for its founding long continued to play an important part in its prosperity. Lumber and tar from the forests also assumed a large place in the exports of the country down to the end of the seventeenth century.

Agriculture and household industries. In spite of a serious attempt made by the Dutch to establish manors on the banks of the Hudson, these manors were of slight importance in comparison with the great numbers of small farms held by freeholders in New York as well as in New Jersey, Pennsylvania, and Delaware. These farms were usually two or three hundred acres in extent. They were farmed with the prime purpose of supplying the necessities of life to their owners. Corn and wheat, vegetables, fruit, cattle, sheep, hogs, and chickens were raised, and a small patch of flax and hemp was often added. Wood was cut from the wood lot and fashioned by the farmers into farming implements, dishes, and furniture. The skins of the animals furnished shoes, leather breeches, and harnesses. From the wool and flax the farmer's wife and daughters manufactured the clothing of the family. The spinning wheel and the knitting needles were always busy. The well-to-do kept servants to do much of this work for them. Sometimes these were slaves and sometimes the indentured white servants of which we have already spoken.

The methods of agriculture practiced on these farms were very crude. The manuring of the land, rotation of crops, and constant hoeing which marked the improved cultivation of the English fields in the eighteenth century were little practiced here. There were two reasons for this. In the first place such methods were known to few in this country, and, in the second, they were less necessary on fields newly brought under the plow than on the exhausted farms of Europe.

In a community of small farmers such as we have described it was very natural that each should build his house on that part of his land nearest his neighbors. This led to the growth of little villages, and the village led in its turn to some differentiation in industry. If there were a number of people within a short distance it paid one of the farmers to build a mill dam either by water or wind, where he ground his own grain and that of his neighbor; some man who had been a tanner in the old country enlarged his vats and tanned the hides which his neighbors brought him, in addition to those from his own cattle; another, a weaver, gave out word that he was ready to weave the thread his neighbors had spun if they would bring it to him in the early spring before work on his farm took all his time. Such industrial conditions as these existed in many parts of the middle colonies down to the beginning of the nineteenth century. On the other hand, in some regions a much more elaborate system of industry sprang up.

Shop industry. Before the seventeenth century was over, the middle colonies boasted a number of cities—places of several thousand inhabitants. In 1735 New York had a population of about ten thousand and Philadelphia was considerably larger, and in these places craftsmen from the old country settled and continued to ply their trade in their little shops. Mention is made of watchmakers, tailors, printers, peruke-makers, stocking-weavers, fullers, dyers, brewers, cabinetmakers, and many other craftsmen in Philadelphia at the time of the Revolution. The small scale on which these industries were carried on would lead us to compare them to the shops of the craftsmen of the Middle Ages. Much of the work was custom work, and little capital was required to start such an

enterprise. The production of such plants seldom went beyond the community in which the shop was located.

Commercial manufacturing difficulties. In some instances, however, the shop owner used to sell his goods to merchants as well as to his neighbors, and his goods entered commerce in this way. The wider market which this opened up to his products might have led to the development of such manufacturing as existed in England if labor and capital had not been so hard to get and the demand outside his own vicinity so uncertain. One year the merchants would buy all they could get of a particular commodity, and the next, on account of war or an overstock of English goods in the place where it had been sold, no more of it would



Courtesy of the Metropolitan Museum of Art

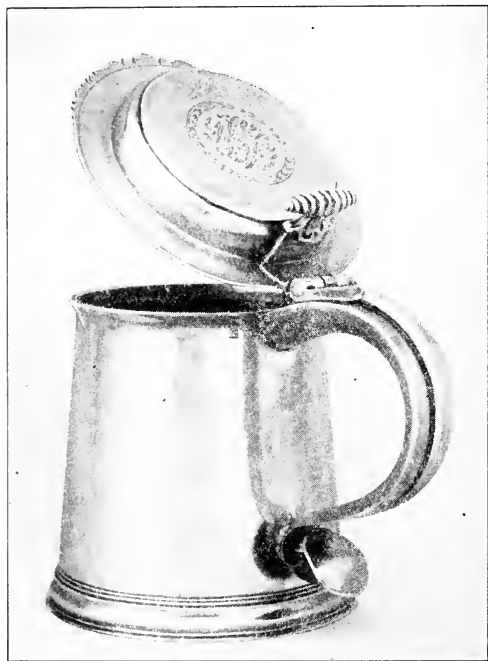
A HIGHBOY MADE IN PHILADELPHIA BY A
CABINETMAKER, WILLIAM SARENY, WHO LIVED
FROM 1722 TO 1787

be bought. When a steady trade in any manufactured article was created, the English government did its best to smother it. For instance, New York and New England were selling hats extensively in the other colonies and in the West Indies. The London hatters petitioned Parliament to put a stop to this, as it interfered

with their trade. In response to their request Parliament in 1732 forbade the export of hats from any of the colonies. Although this law, like so many made by the English for their colonies, was not strictly enforced, it did much to discourage the manufacturing

of hats by limiting the hatters of each colony to their own local market.

The iron industry. The making of iron had somewhat the same history as the manufacture of hats. As long as the colonists were content to smelt the ore and send the pigs, or bars, to England to be manufactured, all went well. When the colonists went farther and made their own kettles and tools and slit sheets of iron into strips for nail-making, Parliament passed a law (1750)



Courtesy of the Metropolitan Museum of Art

SILVER TANKARD MADE BY PETER QUINTARD
ABOUT 1740

which prohibited the erection in the colonies of slitting or rolling mills, tilt hammers, or steel furnaces. Under this law the colonists could still cast kettles, pans, and cannon, but they could not make tools, implements, or hardware.

Flour and bread. In the neighborhood of New York and Philadelphia two industries flourished with which the English government did not interfere—the milling of flour and the baking of

bread. Several conditions favored these industries. About both cities lay a good farming district from which the surplus wheat might be bought at a very reasonable rate. There was plenty of water power to run the flour mills, and there was in the two ports a steady demand for flour for shipment to the West Indies. Bread-making, which was in some cases carried on in bakeries connected with the mills, served to supply the local demand and also the call for ship bread created by the many trading ships and fishermen's boats which came into port. These industries grew to considerable dimensions and helped to keep even the balance of trade with Europe.

Commerce. In the middle colonies there was much more commerce than in the South, and this commerce was to a large extent in the hands of the colonists themselves. Part of this trade was that with the interior. Furs, forest products, and wheat came down the Hudson to New York, and the manufactured goods produced by colonial craftsmen or imported from England went back in exchange. The rest of the trade was with the other colonies of the mainland, intercolonial trade, and what might be called the foreign trade—that with southern Europe, Africa, the West Indies, and England. In 1769 this foreign trade included, for New York, exports to the value of \$1,160,000 and imports worth \$945,000. For Philadelphia the figures are larger, the imports being \$2,000,000 and the exports \$2,050,000.

New England colonies. *Geography.* The New England colonies, which comprised what are now the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut, in some respects were not as blessed by nature as the colonies farther south. The climate was cooler and the summer shorter; the soil, except in a few favored localities, less fertile. When the trees were cleared from a bit of ground, there were still innumerable rocks, great and small, to be laboriously taken from the field before it could be plowed. In this colder climate live stock required more protection than in the South. In fact nothing could be raised without the expenditure of a greater effort than was required in the other colonies. On the other hand, the country was

provided with trees of excellent quality and size for shipbuilding, and there were many little harbors where this industry might be carried on. These harbors lay at a most convenient distance from valuable fishing banks; in fact, the very waters of the harbors themselves were full of fish. The famous whale fisheries of Nantucket began with the killing of the whales which played close about the island.

Sustenance farming and village industries. Although wheat and flax, cattle and corn, and all the other necessities of life could be raised with less labor and therefore more cheaply in the middle colonies than in New England, freights were so high and transportation so uncertain that each New England village and almost each household was in the main self-sustaining. On the other hand, because of the poor soil there was no incentive to raise any of these crops in larger amounts than was required to meet the immediate needs of the household, and so farms were even smaller than in the middle and Southern colonies. As the Indians were more hostile here than elsewhere the first settlers built their homes close together in villages, a custom which their small-scale agriculture inclined them to keep up when the necessity for it had passed. Here, as in the middle colonies, village life brought about some differentiation in industry. The farmer, who was also miller, weaver, tanner, blacksmith, was found in almost every town, and the list grew as the town increased in importance and the more settled condition of the country produced more wealth with which people could supply their wants.

Fisheries. It was not to the land but to the sea that the New England colonists looked for the means with which to purchase European goods. The first fisheries to develop were the cod and mackerel fisheries. These fish were partly salted on shipboard and then brought on shore to be further salted and then dried in the sun. Some of this fish was eaten by the colonists, but large quantities were sold in the south of Europe and in the West Indies. By 1770 the whale fisheries had begun to assume importance. From the whale, especially from the variety known as the sperm whale, was obtained an oil which was burned in lamps and

manufactured into candles, and a bone which was used in stiffening ladies' dresses. Most of the whale oil which was not used in the colonies was sold in England, and the candles found a market in the West Indies. Taken all together, the products of the fisheries exported were worth only about half what the tobacco that was exported brought its owners. This fact is very important, for we can trace two results arising from it: first, the colonists in New



CHURCH ON COHASSET COMMON, MASSACHUSETTS, BUILT IN THE EARLY EIGHTEENTH CENTURY. THE HOUSE ON THE RIGHT WAS BUILT ABOUT THE SAME TIME

Cohasset was a seaport town, but like most New England towns the principal residences were gathered around a common

England made more effort than those in the South to supply their own manufactured goods, and, secondly, the New Englanders looked for other products which they could sell in Europe. They found an answer in the shipbuilding which their own needs had called into being.

Shipbuilding: its origin and expansion. The shipbuilding industry started with the very founding of the New England colonies. This does not mean that the little group of men who were living on the skirt of an untamed wilderness, with nothing but

their own muscles and a few simple tools to convert nature to their needs, constructed a modern shipyard and turned out ocean liners.

To begin with, there were no very large ships in that day. Even the *Mayflower*, in which the Pilgrims crossed the ocean, was a tiny affair, and the first boats built by the settlers were very much smaller than that—little fishing boats, of which they stood in immediate need. The oak trees, which grew to the water's edge, were cut down with axes and sawed by hand into planks, and the firs were cut and cleaned for masts. From the pitch pine the tar and turpentine, which were needed for making the boats water tight, were extracted. The work was carried on in a simple, even crude way, with a great expenditure of muscular effort which reminds us strongly of the industries of primitive man.

So much effort for so little result did not please the colonists, many of whom had not been accustomed to such monotonous labor before they came to this country. As they could not hire laborers in sufficient numbers, they set to work and developed the sawmill, in which trees were sawed into boards by water power. The sawmill may have been known in England, but long after it was in general use in America hand-sawed boards continued to be the rule in the mother country, where labor was far cheaper and easier to get. Dockyards were built as shipbuilding expanded, and larger ships and more of them were put out. The colonists not only built fishing boats but ocean ships for the trade with Europe and the West Indies. Some of these were used by the Boston merchants, who were becoming traders on a large scale, and some were sold to the still wealthier and more important merchants of London. By 1775 one third of the shipping flying the British flag had been built in America.

To build dockyards and sawmills required some capital, and that the colonists were able to get together; but to buy the material that went into a ship, and, in addition, pay the shipwrights who made it, was a serious matter. This was especially hard on the shipbuilder when his ship was sold in England, and months or even years would pass between the time he paid out his money and the time when the ship was paid for. In fact, to finance such

manufacturing as this was more than the resources of the colonial shipbuilder could stand. For the lack of sufficient capital, therefore, he did most of his work on orders from merchants who were ready to advance him money from time to time as the work proceeded. In this way he was able to carry on his business with a very small capital in proportion to the number and size of the ships he turned out.

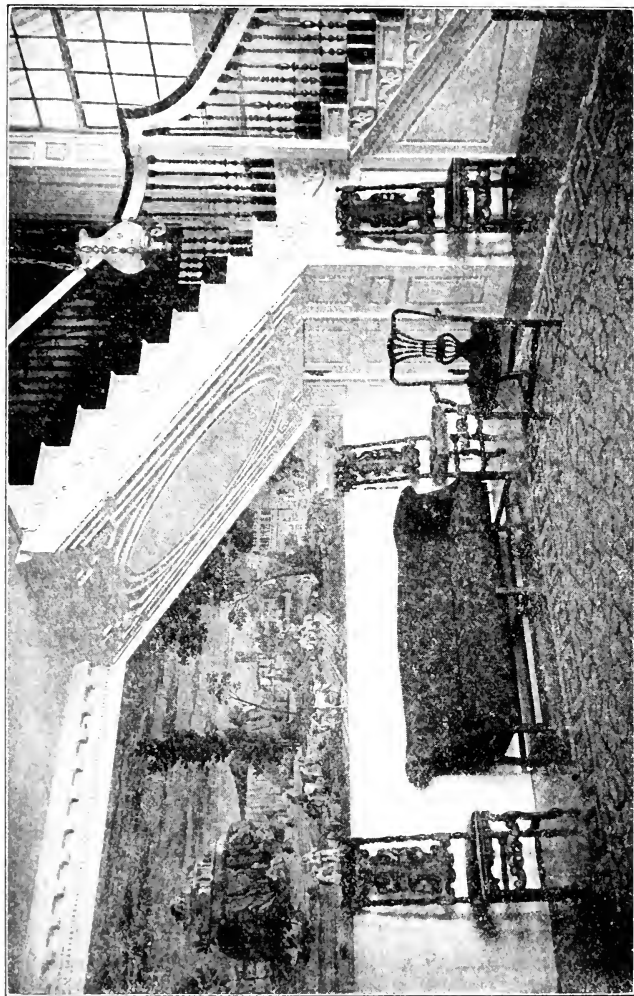
Low cost of American shipbuilding. The reason why the English merchants bought so many American ships, in spite of the inconvenience of ordering them from such a distance, was that the American ships could be built for two thirds of what it cost to build ships in England, and they sold for a correspondingly smaller sum. This was due to the low cost of the raw materials. In England a shipbuilder must use either Scandinavian or American timber, to the original cost of which had been added a high freight, or English timber, which was scarce and correspondingly expensive. Over here the shipbuilder could buy his planks and masts very cheaply because they were much less expensive to produce. Oaks, pines, and firs still grew in almost unlimited quantities on the banks of streams, down which they could be floated to sawmills. The use of sawmills also helped to reduce the cost of production. In selling his product the shipbuilder had this advantage—that it could take itself to market, and so added up no freight charges.

Commerce. Before taking up the other industries of New England the commerce of this section of the country must be considered. A larger commerce developed here than anywhere else in the colonies, and the commercial relations which the district established greatly influenced its industries. Like shipbuilding, commerce at first was intended to care for the immediate needs of the colonists. Most of the early settlements were close to the water, and so communication by boat was often easier than by land. Although one settlement as a rule did not produce anything which was not also produced in every other settlement, from the first it became customary for imports to be landed at Boston, Salem, Portsmouth, New Haven, or Providence, and from there

to be distributed to the outlying settlements. In the same way these ports were collecting-places for the furs, forest products, dried fish, and the like which the smaller towns sent abroad, and as the ports grew they developed wants which they could not supply for themselves. As soon as Boston, for instance, became a town of any size it was necessary to bring in some of the grain, meat, and other foodstuffs which were used in the town. Of course for a long time the worthies of the town kept cows on the common and raised in their gardens a considerable part of their food, but the things which took more extended fields to produce were sent in from the farming villages about. In this way a trade sprang up between the different seaport towns of the colony and the country near them.

From the first the New England colonists were dependent on the mother country for supplies of manufactured goods, and all through the history of the handicraft period the amount they bought abroad was only limited by their ability to pay. Of the necessities of life they soon had plenty, but the luxuries which in their old home they knew well enough to love,—fine furniture and fine clothes, spices and tea, books and pictures,—all these came to them largely through the hands of the English merchants. The trade with the mother country which began with their first coming grew as their purchasing power grew, for they never produced these things to their satisfaction in this country until within recent times.

Trade with the south of Europe and the West Indies. Unfortunately for New England she had no crop like tobacco which was in demand in England. The tariff designed to protect the English farmer barred out her farm products, the English fishermen supplied the home market, and the freights were so high that the lumber from America often could not be sold as cheaply as that from Norway and Sweden, and so found no market there. For this reason the New Englanders must buy largely for money, and money was one of the most difficult things for them to get. In the south of Europe they found a place to sell their dried fish and their lumber for cash, and in the West Indies they exchanged fish, lumber, grain, pork, and other food products for cotton,



INTERIOR OF THE HOME OF A WELL-TO-DO MERCHANT OF THE COLONIAL PERIOD, PORTSMOUTH, NEW HAMPSHIRE

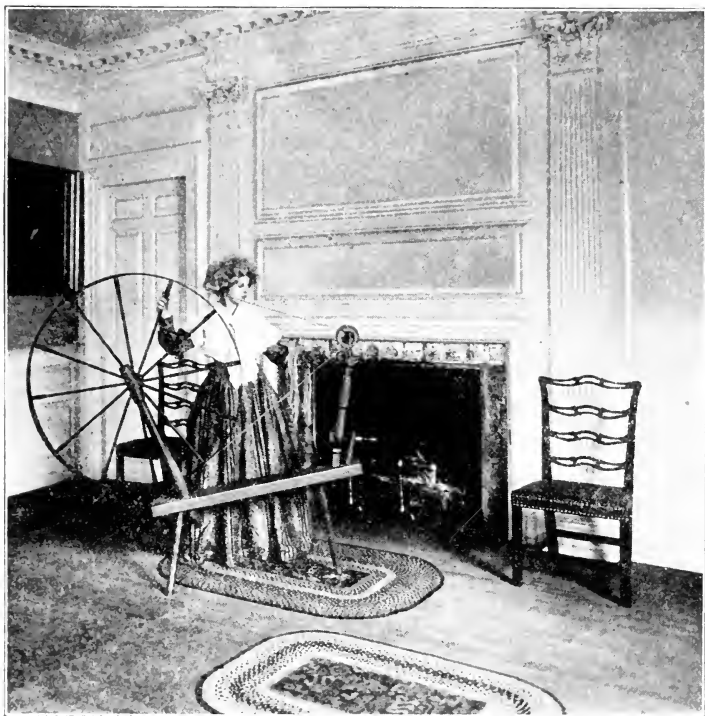
This furniture was probably imported from England. Even the paneling and the bricks for fine houses were sometimes imported

tobacco, salt, rum, sugar, molasses, and coin. With all this they never obtained enough coin to supply their own needs and pay their debts in England. Most of what came in went across the water again, and even at that they could not buy all they wanted, and were forced to piece out with goods of domestic manufacture. This increased the manufacturing of the colony greatly when money was especially scarce.

Trade with the other colonies. New England also carried goods to the other colonies, and from these colonies to Europe and the West Indies. The British government tried to break up this carrying trade in order to reserve it for the English merchants. In spite of regulations to the contrary, the trade continued, although with varying fortune. As the manufacture of shoes, hats, iron goods, rum, and the like attained a considerable development in the North, the products of these industries were supplied to the South in place of the cheaper grades of English wares. The trade never amounted to much, however, until after the Revolution, when the South became a cotton-raising district and sent cotton to the North in return for coarse manufactures.

Manufacturing ; shop industries. We have spoken of the village craftsman who played such a part in New England industry. His work was of a different type from that of his city brother, who set up his shop in Boston or Providence or New Haven. The village carpenter built houses, boats, or furniture, as the case required. When he was not at work at his trade he farmed his land. One could hardly expect that either as a housebuilder or a cabinet-maker he would possess the skill of an expert. As the village grew into the city there was work enough to keep more than one busy, and each was able to keep to some one particular line of work for which he was best suited. In this way, by specializing, each developed a greater skill. The man who made shoes did not repair them, and the weaver of linen wove no woolen cloth. Craftsmen set up their little shops, and as their business grew they took young men to train. During the seventeenth century this process went on slowly, but in the eighteenth century it increased in speed with the increasing wants and wealth of the

settlers. In the seventeenth century we read of the shops of curriers, tanners, blacksmiths, carpenters, chair-makers, and boat-builders in Boston. By the next century spermaceti chandlers, pewterers, coach-makers, wig-makers, and countless more were



NEW ENGLAND COLONIAL INTERIOR WITH SPINNER AT THE WHEEL

added to the list. Paul Revere, of the famous midnight ride, was a silversmith. These craftsmen might be compared with those of the Middle Ages in England. In one respect only were they quite unlike—in America there were not enough members of any one craft to form guilds except in a very few instances. Even at their best they were not equal to the highly trained

English craftsmen of the period, although they produced some beautiful pieces of furniture, silver, pewter, and the like, which may be seen in our museums and old houses.

The domestic system. The domestic system of industry also existed to some extent in all the colonies and especially in those of New England. We hear of merchants who gave out flax and wool



Courtesy of the Metropolitan Museum of Art

CHEST WITH ONE DRAWER, MADE BETWEEN 1650 AND 1675

Chests of this kind were used for household linens and clothing before bureaus were introduced

to their customers to be spun in payment for the goods which the merchants had sold them. Yarn spun in the homes from home-grown wool was traded with the peddlers for their wares or sold at markets, and so found its way into commerce. Nails and shingles were made by the men in their homes not only for their own use but also for sale.

The factory system. Before the Industrial Revolution the factory system did not exist anywhere in its full development, but the beginnings of it may be traced in the colonies as well as in

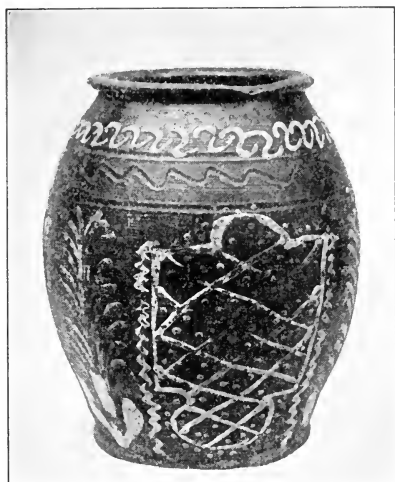
England. By the middle of the eighteenth century there were linen weavers who had gathered in their much extended shops a large number of spinners. A stocking-maker was running a large number of knitting machines under one roof in the manner of a small factory. The most striking example is the case of a man named Molineux who, in 1769, had four hundred spinning wheels, several warping and twisting mills, looms, a furnace with hot and cold presses, and a dyehouse all in one establishment. Such cases were the rare exception even at the end of the period we are studying. Most industries were organized on the plan of the craftsman's shop—with limited capital, simple and small equipment, and but few workers.

Government regulation of industry and commerce.

Parliament. In the two centuries of colonial development government regulation of industry and commerce

was the order of the day. The colonial legislatures as well as the English Parliament dealt with it in innumerable laws, of which only a few need be considered here.

All the laws passed by Parliament on this subject had three main objects. In the first place, they were intended to make the colonies serve as far as possible as a market for English-manufactured goods, and to do this they shut out foreign goods and discouraged colonial manufactures. In the second place, they aimed to encourage the colonists to produce and send to England those raw materials which her industries required and which she did not raise herself. In the third place, they were intended to



Courtesy of the Metropolitan Museum of Art

AMERICAN POTTERY OF THE EIGHTEENTH CENTURY

shut out of commerce all foreign nations and to some extent the colonists themselves in order that they might not take from the English merchants the profits of carrying goods from place to place. These objects were framed with the interests of the English merchants and manufacturers at heart and with little or no care for the welfare of the colonists. Worse still, the laws made in the effort to attain these ends were drawn up by men who knew practically nothing of the conditions in the countries for which they were legislating. They often succeeded in injuring the business of the colonists without in any way advancing the business of those whom they were attempting to serve.

Navigation Laws. The Navigation Laws, a series of acts which regulated commerce, provided that goods could be sent to England or her colonies only in English ships or in the ships of the nation which produced the goods. This prevented the Dutch, for instance, who had been getting a great deal of business because their freight rates were cheaper than the English rates, from carrying French wines to England or French silks to Virginia. These acts also provided that certain enumerated articles should not be shipped from the colonies to any other place except another colony or England. This list, like the whole act, was changed from time to time as circumstances seemed to require. Below is the original list with the additions and their dates.

Original list. 1660; sugar, tobacco, cotton, ginger, indigo, and dyewoods.

Additions. 1706: molasses, rice, naval stores.

1722: copper, beaver and other skins.

1764: coffee, pimento, coconuts, whale fins, raw silk, hides and skins, pot and pearl ashes, iron, and lumber.

The purpose of this list was to secure to English merchants the entire trade in these articles and to furnish the English manufacturer a plentiful supply for his use.

In 1733 the Molasses Act was passed. This imposed a high duty on rum, molasses, and sugar imported into the colonies from the French, Dutch, Spanish, or Danish West Indies. It was intended to protect the British West Indies from competition, but

they hardly needed this protection, as they were not able to supply the demand for sugar when the colonies turned to them. This act would have been more injurious than any of the others if it had been enforced, as the colonists sold a great deal in these places which they could not have sold if they had not been able to take sugar and molasses in part payment. Besides this, it fortunately cut off the supply of cheap molasses, which was used in making rum. The act was not enforced until after 1763, when the attempt to enforce it did much to bring on the Revolution.

Regulation of industry. The foregoing acts, although aimed directly at commerce, had an effect on industry as well. There were other acts which attacked industry very directly. In 1699 an act was passed which ordered that no woolen yarn or woolen cloth should be sold outside the colony in which it was manufactured. This act was intended to discourage an industry which was growing up in a few places in the middle and Northern colonies, and it succeeded fairly well in its purpose. In 1732 the same regulation was applied to hats, as we have noted before. In 1750, as we have also noticed, a law was passed which forbade the erection of mills for the manufacture of iron in the colonies.

Bounties. The home government tried coaxing as well as the whip on their colonies. In 1706 bounties were offered on all hemp, masts, tar, pitch, rosin, and turpentine which was exported from the colonies to England. In 1748 a bounty was placed on exports of indigo. These bounties were intended to encourage the colonists to produce more of these commodities than they required for their own needs and to supply the English manufacturers. The English government also admitted some colonial products at a lower duty than that collected on the goods of foreign countries.

Effect of English regulations. It is difficult to say just how much effect these regulations had on the industry and commerce of the colonies. To begin with, many of them were not rigidly enforced, and some not at all until just before the Revolution. This was especially true of the laws forbidding trade with the countries of northern Europe and the non-English West Indies, which would have been the most injurious for a line of business

for which the Northern colonies were well fitted. Many of the other regulations merely amounted to requiring by law that the colonists keep to the lines of production to which they were driven by natural conditions. As we have already noticed, the colonies were prevented by want of capital, lack of labor, poor transportation facilities, and a consequently limited market from engaging in manufacturing on a large scale. The production of agricultural and forest products, on the other hand, was both profitable and easy, so the laws against manufacturing were unnecessary. Again, the trade of the colonies would have gone to England to a great degree in any event. England was making the goods they needed, and English merchants were ready to send them to America. The same causes that gave England the trade of Russia, India, and Africa would have given her the business with America in any event. One very great effect these laws did have, however: they weakened the loyalty of the colonists for their mother country. Even when these laws injured colonial business only very slightly, they showed how ready the English government was to sacrifice the colonists to the merchants at home. When laws did interfere seriously with the interests of the colonists, as did the trade laws passed after 1764, they were resisted and led to separation from the mother country.

Colonial regulation. Each colonial legislature made laws to regulate industry and commerce in addition to those which England passed for all the colonies. As far as it could, each colony wished to help the commerce and industry carried on by its own subjects and to discourage that of other people. With that object in view, several of them charged lower duties on the goods imported or exported in the ships of their own colonists. Several of the colonies offered bounties for the production of goods which were needed in the colony but which for some reason it was not profitable to make under the conditions then existing. For instance, the government of Virginia at one time offered a bounty for wheat grown in the colony. It was more profitable to raise tobacco and corn and import the wheat which was needed than to raise it. On the other hand, the authorities felt that the colony ought to

be self-supporting. As we have seen, the want of capital often prevented the establishment of an industry. Colonial legislatures and town governments often gave land or lent money to help a much-needed industry to get started. In 1645 Newbury, Massachusetts, gave twenty pounds to the builder of its first gristmill. In 1725 Rhode Island lent William Borden five hundred pounds to assist him in establishing a sailcloth manufacture and in 1728 three thousand more.

Besides encouraging the commerce and industries of its people by such measures, the colonies tried to maintain the reputation of colonial products abroad by inspecting the goods sent out.

Different colonies provided for the inspection of various articles, but the inspection of beef and pork was insisted upon everywhere. In New England and New York exported fish was carefully inspected, and in every colony, except Delaware, the laws provided for official measurement and inspection of exported timber and lumber. Among the other articles worthy of special mention because of the rigid inspection of exports are tobacco, flour, bread, and naval stores. Special care was taken to prevent the exportation of tobacco of poor quality. The colonies from which liquors were shipped abroad provided for the official gauging of casks, and in the case of nearly all the commodities exported the government passed such laws as were deemed necessary to prevent the shipper from deceiving the foreign buyer.

Effect of colonial legislation. Like the trade laws passed by England the colonial regulations seem to have had very little effect on the economic development of the country. Great natural forces were at work which were far more powerful than any government regulation in determining the line of growth which the industries of the country should follow.

Period of the American Revolution. *Economic causes of the Revolution.* Up to the year 1763, when the French and Indian War ended, there was no very serious friction between the colonies and the mother country over trade restrictions. This was due in part to the fact that the English laws were more or less in accordance with the natural tendencies of a region sparsely settled and still very much in the wild state, and in part to neglect to

enforce the laws. With the close of the war these conditions were changed. In the first place, the colonies were growing much more settled and at the same time becoming more like the mother country, so that the laws hurt more ; in the second place, England set about enforcing the laws on the statute books and adding others of a most troublesome sort. To some extent the colonists had brought this misfortune on themselves, for during the war they had traded supplies to the enemy and so made a final victory more difficult for England to attain, and at the same time they had left England to do most of the fighting, even in America. There is only this to be said in their defense. For many years they had been treated either to annoyance or neglect, and little loyalty to the empire which was growing up unconsciously under England's wings had stirred in them. So there was something to be said on both sides of the quarrel which eventually left the colonies free to work out their own destiny.

Effect of nonimportation agreements and war. In the course of the quarrel the colonists several times drew up nonimportation agreements in which they declared their intention of buying no more goods imported from England until she repealed the obnoxious laws. These agreements and the war, which stopped almost all importations, both had very much the same effect on the commerce and industries of the colonies. The merchants and ship-owners found their business ruined, but manufacturers were more busy than ever. People who had made goods at home for their own use found that they could sell their homespun at market more readily than before. This led to an increase in manufacturing, both in the homes and in the shops and mills. The industries which were most affected were the making of woolen goods, ironware and steel ware, powder, guns, paper, glass, pottery, and salt. All these industries had been undertaken before the war, but when imports were shut off they grew more rapidly than they would otherwise have done. When the war was over, trade resumed its former course. Merchants who had devoted their capital to manufacturing temporarily went back to their

former occupation, and manufacturing continued on much the old lines until the War of 1812 again created conditions peculiarly favorable to its development.

TOPICS FOR DISCUSSION

1. Compare a Southern plantation with a medieval manor as to crops, labor system, and relations with the outside world.
2. Imagine that you are the son of a New Jersey farmer in the colonial period. How would you spend your time?
3. Imagine yourself spending a day in Philadelphia, New York, or Boston. What would you see?
4. Present all the arguments for and against England's regulation of colonial commerce and industry.
5. Compare the methods employed to finance colonial industrial and commercial ventures with the methods employed today.
6. Why did the Revolutionary War have so little effect upon industry and commerce?

REFERENCES

See list of books following Chapter XV. In addition the following will be found of service:

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CHAPTER XVII

THE INDUSTRIAL REVOLUTION IN THE UNITED STATES, 1808

Events preparing the way. *Federal government.* Although the Revolutionary War had comparatively little effect upon the industry and commerce of the country, the adoption of the Constitution and the creation of a strong Federal government very deeply affected both. Under Hamilton's guidance the new government established the National Bank and a reliable currency. This made the transaction of business easier and safer and so encouraged business men to engage in manufacturing and commercial enterprises. Under the Constitution citizens of one state had citizenship privileges in all the other states, and it was no longer possible for one state to tax goods imported from another state. With these changes interstate commerce sprang up. Foreign commerce was also benefited by the establishment of a strong central government. In a very short time President Washington was able to make treaties with England and Spain which bettered conditions for the merchants engaged in trade with these countries. Gradually the New England shipmasters and merchants pushed their way into the China trade and the trade with India. All this gave a wider market for the manufacturer of boots and shoes, hardware, textiles, flour, bread, and all ship supplies. Industry expanded to meet the new demands, and we find the domestic system appearing in the middle and Eastern states.

The domestic system. All during the colonial period much manufacturing had been done in the homes, and any surplus which was produced was sold. For instance, in the winter, when there was little to do outside, farmers spent their spare time making shingles or nails. Some of these they would use in repairing their buildings in the spring, but the rest were sold to peddlers

who came through the country with city wares. This is the domestic system in its simpler form. By the time the Revolution broke out a more advanced form of the domestic system was beginning to make its appearance. Merchants, who were the capitalists of New England and the middle Atlantic states, gave out cotton to be spun, straw braid to be sewed into hats, buttons to be covered, the soles and uppers of shoes to be finished, and yarn to be woven. In some cases the merchant provided the tools as well as the raw materials. This system was greatly extended as the merchants found larger and larger markets for their goods, and it did not entirely disappear until after the Civil War.

European wars, 1792-1815. Early in Washington's first administration the first of a series of wars broke out in Europe which were to last with little intermission until 1815. In 1789 the French Revolution had begun. The king was deposed and beheaded and a republic set up. Without waiting to put the new government on its feet, the overzealous leaders called upon the other peoples of Europe to overturn their governments and offered them military assistance. This angered the rulers of the other nations and war began. At first the struggle went against the French, but in 1795 Napoleon was put in command of their armies, and after that victory followed victory on land. France conquered Holland, half of Germany, Italy, and Spain.

On the sea the situation was different. The English fleet proved as invincible as the French army. Try as he would, Napoleon could not defeat the English fleet. There remained only one way to break England's power and make Parliament cry quits, and that was to cut off her supplies, or at least spoil her commerce. French boats, which did not dare face the English men of war, were sent out to capture English merchant ships or any ships trading with England. England retaliated by declaring a blockade of France and all her dependencies and by capturing any boats that she could which traded with France or her allies. At this game the English were much more successful than the French, but neither side was able to catch anything like all the ships trading with the other. French merchantmen rapidly disappeared

from the seas, but neutral commerce succeeded fairly well in avoiding capture. As fast as the French and English ships were destroyed, the demand for foreign goods increased, and the profits to merchants who safely reached either a French or English port were very large.

Effect of European wars on American commerce. One effect of European wars on American commerce was to encourage greatly the building and sailing of American ships, as the United States was the largest neutral country at the time. The products of the French and Spanish West Indies were carried to Europe in American vessels and manufactured goods brought back as return cargo. Goods were also carried from one European nation to another, a thing impossible in peace times under the navigation laws which the European nations had established. Another effect of the wars was to create a tremendous demand for our farm products. The nations engaged in war were unable to keep up their normal production of foodstuffs.

Embargo; War of 1812. Unfortunately more and more of the American ships were captured, and often both boats and crews were treated in a manner contrary to the rules of war then existing. Jefferson, our president at the time, tried to settle the matter by ordering no ships to sail for a foreign port. This embargo of 1808 seemed to the merchant the worst possible solution of the difficulty. It was bad enough to lose a ship and cargo occasionally, but it was worse still to have all his ships rotting at the wharves and his capital, in money as well as ships, lying idle. After a year or two of this policy trade was resumed, but in a very short time matters became more serious than before, and we declared war on England. Now it became impossible for our merchants to venture out of port, for English ships were waiting off our shores to catch our vessels the minute they appeared.

Effect on home market. The first effect of the embargo and the war was to shut off imports and so to create a market in the United States for home manufactures such as had never existed before. Manufacturers able to imitate French silks, English

clothes, cutlery, china, and so on, found customers ready to buy them. This greatly encouraged the production of the finer wares, which had been little manufactured in this country.

Transfer of capital from commerce to industry. The embargo and the war had a second effect upon the business of the country which also helped industry. The merchants who had capital to invest were looking for new openings now that foreign commerce was at a standstill. Quite naturally many of them turned the executive ability which had made them successful in their old line, along with the capital formerly invested in trading, to industrial enterprises.

Industry was in a condition where it only needed capital and organizing ability such as these merchants possessed to advance rapidly. The embargo and the war had provided a strong demand for manufactured goods which could be supplied by American manufacturers only. In the face of this demand, prices were rising to a point where the successful manufacturer could reap a rich return. At the same time, there were no well-established concerns to compete with a newcomer in the field.

Manufacturing in 1808. In 1808 most manufactured goods were produced in this country under one of three different systems. First, in the quantity of goods which it produced, came the household system: on the plantations of the South, in the frontier settlements, and on the New England farms the members of the household still manufactured a large part of all the goods which they consumed. The second was the shop or craft system. Shops were of two kinds: first, there were the city shops, in which were manufactured and sold fine furniture, silverware, jewelry, clothing, shoes, and a thousand other things. Much of the work was done to order. The second class of shops were those which dealt with coarser products and were often situated in the country on some waterway. These included mills for grinding grain or sawing wood; bloomeries, where iron was smelted from the ore ready for the blacksmith; the blacksmith's shop, where farming tools, pots, and pans, and hardware of various sorts were made when there were no horses to be shod; the carriage-maker's shop, where

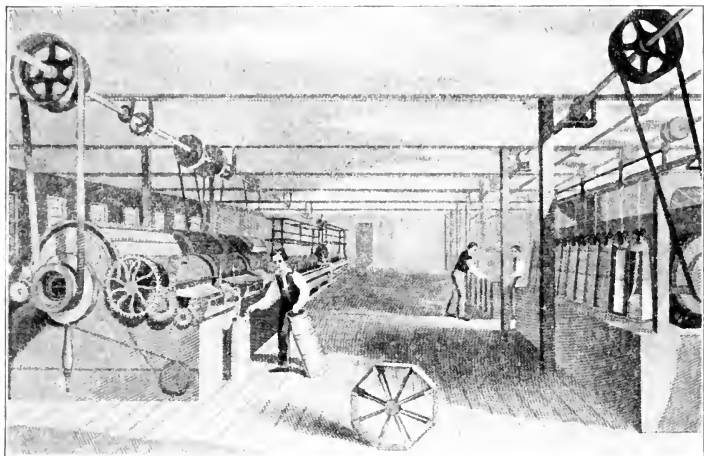
the parts of the carriage were assembled ; and a long list more. These shops were beginning to specialize by this time. Some made only the metal ends of the hoe, while another made hoe handles, and a third assembled the parts, fastened them together, and sold them. There was little machinery used, and the organization was very simple and fitted rather to a business among neighbors than to a national or world trade. The third form of industrial organization was the domestic system. This had been developed by the merchants at first, but in some cases it was also an adjunct of the mills. For instance, where spinning machines had been set up,—and there were already some in this country,—the yarn spun was given out to weavers to make into cloth in their own homes.

To the capitalist organizer there were two points at which the industrial system might be greatly improved: machinery of a better type might be introduced or the various processes in the manufacture of a line of goods might be brought together under one roof and so managed as to eliminate all waste. Some capitalists introduced one improvement, some the other, and some both.

The use of machinery was not unknown in the United States in 1808. The cotton gin, invented by Eli Whitney in 1793, was in very general use by this date. As early as 1790 Hargreaves's spinning jenny was in use in a few places. About the same time Arkwright's water frame was introduced, and a few years later the spinning mule. Both the jenny and the mule continued to be run by hand until 1812. Even at that, such machines were not common, and the spinning wheels were still busy. The purchasing of expensive machinery and its profitable employment were beyond many of the men who had hitherto managed the industries of the country.

The Industrial Revolution. With the stimulus given to manufacturing by the embargo and the war the Industrial Revolution began. Machinery was introduced into manufacturing, and the factory system was set up. Some of the machines were invented here, some were imitations of the machines long in use in England, and some were English machines with improvements by

American inventors. As it was against the law for anyone to send machines out of England or even a drawing of a machine, many of the machines produced here were constructed by workmen from memory, with the help of only such rough sketches as they had been able to smuggle out of England. Steam engines were employed to run the machinery, better spinning machines were introduced or invented, roller printing of cottons was substituted



INTERIOR OF AN EARLY NEW ENGLAND FACTORY

Carding, drawing, roving, and spinning as introduced by Samuel Slater

for hand printing, and power looms were set up. The number of machines in use increased very rapidly, and the quantity of goods kept pace with this increase. In 1808 there were only eight thousand spindles employed in the manufacture of cotton yarn; in 1815 there were five million.

At the same time that machinery was introduced the factory system came in, just as it had in England. To Francis C. Lowell belongs the honor of establishing the first complete factory in this country. In 1814 he brought all the processes of spinning and weaving under one roof in his factory at Waltham, Massachusetts.

His example was soon followed by others. Such industrial establishments as this required large investments of capital, and we find that by 1815 fifty million dollars had been invested in the manufacture of textiles alone. The labor for these factories came in part from the craftsman class in the cities and in part from the sons and daughters of the farmers. The conditions were much better than they had been in the early factories in England, and the pay was much higher. Although the wages paid did not equal what a skilled craftsman could earn under the handicraft system, they were much better than those usually paid unskilled labor.

A large proportion of the factories centered in New England at such places as New Bedford, Lowell, Lawrence, Holyoke, and Fall River. There were two reasons for this: in the first place, many of the factories still used water power, and this the streams of the New England states were amply able to supply; in the second place, many of the men who invested in these manufacturing enterprises were New England merchants, and they naturally located their plants in the neighborhood of their homes. Another great manufacturing center was Philadelphia. In and about this city much industry had been carried on under the old systems, and these same establishments were transformed to meet the new methods of production.

Commercial crisis of 1815. In 1815, when the war ended, manufacturing plants—old and new—were running full tilt, and all was joy and prosperity here. This state of things did not last long, however. The European war had practically come to a close the year before, and the European manufacturers who had been running their factories beyond the demand of their present market with the hope of peace and a chance to return to their old markets in America proceeded to dump great quantities of goods of all kinds in this country. These wares they were most anxious to dispose of, and in their anxiety for ready money they would take almost any price that they could get. Prices fell with a crash. Many of the American factories had to close down for a time, and some went into bankruptcy.

In this state of affairs the manufacturers turned to Congress and asked that a tariff be placed on imports which would protect their goods from this foreign competition. Congress responded with the tariff of 1816, which placed a duty of twenty-five per cent on textiles and lesser duties on other manufactured wares. This first distinctly protective tariff was followed by others which increased the duties and enlarged the list of protected industries.

Industry, 1815-1850. Like the rest of the world, the United States very soon recovered from the business depression which followed in the footsteps of peace. Our industrial establishments increased in number and in size. One industry after another was taken out of the home and into the factory. The domestic system, except as an adjunct to the factory, ceased to exist in the more settled parts of the country. A long series of labor-saving machines imported from abroad or invented here improved the quality of our goods, increased the quantity of the output, and reduced the cost of production.

In spite of the advance which industry made between 1815 and 1850 our factories were smaller than those abroad. We produced less manufactured goods in proportion to our population than England or France, and much of our goods was of an inferior quality. Our exports were largely the products of our farms and mines and the rougher manufactured wares, while we continued to import fine wares from Europe.

There were certain very excellent reasons for our backwardness in manufacturing. In this country there was enormous natural wealth which yielded large returns in all investments of capital or labor. The coal and iron mines of Pennsylvania and, later, the oil fields of that state paid large returns to the capitalist who dared venture in these new lines of production. This made it difficult to find the capital needed to enlarge the industrial establishments, which could hold out no such return upon a successful venture.

In the same way the labor problem was constantly rendered more complicated by the inducements which the Western farm

land held out to the laborer. Most of the factory workers were native Americans with the traditions of a farming life close behind them. If a factory was obliged to shut down for a short time, the workers might get together their household effects and move out to the Ohio valley or the prairie states, where they were able to acquire a homestead for almost nothing and to make a living independent of anyone else. This left the factory manager in a bad fix when he was ready to open the shop again. At best he was obliged to offer high wages to build up his force again, and sometimes he remained crippled for months. Our factories have always paid better wages than those of Europe, and in the early days of our history, certainly, our great natural resources were responsible for this. Although the high wages were excellent for the worker, they raised the cost of goods to the American manufacturer above that of his foreign competitor and so served as an effective argument in favor of a protective tariff.

A third problem which our manufacturers had to face was the difficulty of a much-extended market. If the population of the country had been obliging enough to increase as fast as it did, but stay in the original thirteen states, all would have been well; instead of that, the people to whom the manufacturers wished to sell persisted in running farther and farther away from the factories. Transportation was always a serious problem, and it was rendered still more difficult by the scattering of settlements beyond the Alleghenies. There was no good water connection, and the roads were mere cart tracks at best. At first, with every family that moved West, the Eastern factories lost a customer. This continued to be true until better means of transportation were developed. For this reason the great expansion of our industries follows the development of our railroad systems in the period after the Civil War.

Westward expansion. Ever since the first colonies were founded there has been a constant westward movement of the population. From the Atlantic coast the New Englanders pushed west into the Connecticut valley in 1634. In Virginia there was a constant immigration into the interior in search of virgin soil

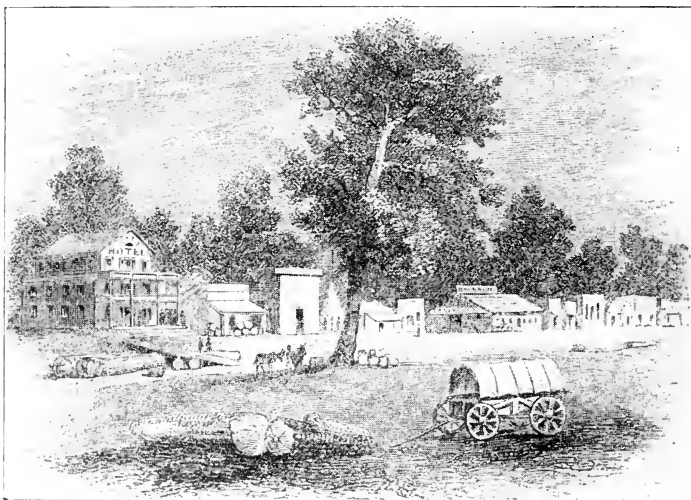
for the greedy tobacco crop. Until the English brought the French and Indian Wars to a victorious close in 1763, the English settlers did not venture across the mountains which shut them off from the Ohio and Mississippi valleys. In the troubled period which preceded the Revolution the procession of pioneers began to move across the mountains into western Pennsylvania, Kentucky, and Tennessee. After the Revolution the westward movement was very strong, and Ohio, Illinois, and Michigan were quickly settled. In 1809 the purchase of the Louisiana Territory opened up a new region for the restless spirits of the Republic, and it was only a little more than ten years when the state of Missouri, across the Mississippi, was asking for admission into the Union. By a war with Mexico in 1848 we obtained Texas and California and all the territory which lies between. In 1848 gold was discovered, and with the rush of the gold hunters to the Pacific coast the last great stage in our westward movement was completed.

Frontier conditions. Frontier life has certain characteristics which vary little from century to century or from place to place. A pioneer had many of the same problems to face, and he solved them in very much the same way whether he lived in western Virginia in 1650 or in California in 1849. In the first place, there was himself—a human being with the need of food and shelter and clothes and with his own muscles and such simple tools as he could carry into the wilderness to force the supply of those needs from nature. In most cases nature offered wild animals and fish for the hunting and an opportunity to raise crops when once the land was tilled. All such goods as are obtainable in a highly organized industrial society were shut off from the pioneer by a long and difficult line of communication. This meant that they were expensive, if not impossible to attain.

Everywhere pioneers fell back upon the household system of production to supply most of their wants. Even after a frontier had become fairly well settled, the farmers and their families continued to spin and weave their own clothes, salt the pork and beef that they raised, and distill their own whisky. Blacksmith

shops sprang up, and forges and gristmills were built, to care for their needs. In fact, the frontier returned for the time, while it continued to be a frontier, to the conditions which ruled in the colonies. For the time being the settlers had ceased to be a part, economically, of the country to which they owed allegiance.

Effect of westward expansion on industry. Two effects of the westward movement on industry have already been mentioned—the



A FRONTIER TOWN

constant demand which the West made upon the capital and upon the labor of the country. There were certain other effects which are worth noting. First of all, the development of the natural wealth of the country made the people much richer. The Westerners had a large purchasing power, and their standard of living was correspondingly high. As soon as transportation facilities made it possible to carry Eastern manufactures to them, they furnished a constantly expanding market for such goods. In this way they stimulated the manufacture of all such goods as farm implements, textiles, clocks, and watches.

A second effect of the westward movement was to open up better farm land than that on the Atlantic seaboard. As soon as improved transportation permitted, the wheat and meat of the West began to crowd out that grown in the East because the cost of production and transportation was less than the cost of production in the East. This drove Easterners into manufacturing more extensively than ever. This tendency for each part of the country to specialize in the line of industry for which it was best fitted found full expression in the South. Ever since Whitney's cotton gin had been invented, the raising of cotton had become enormously profitable. Part of this crop was sent to Europe, and part was manufactured in the East. As soon as the wheat and meat raised in the Ohio valley or along the upper Mississippi fell in price in the Southern states, the South ceased to raise such crops for its own use and devoted all possible land to the cultivation of cotton. Such specialization was entirely dependent upon a satisfactory transportation system. The growth of this system we must now trace.

Transportation roads. Almost immediately after the Revolution there was a movement in the more settled part of the country to build better roads. Most of the new roads were turnpikes built by private companies who realized a fair return on their investment by collecting a toll from all those who passed over the road. Such roads were only built along well-traveled routes where the traffic gave promise of a good business, as between New York and Philadelphia or Boston and New York. On them the stage-coaches, which had hitherto been little used in this country, were used for passenger traffic, and heavy wagons carried the farm produce and manufactured wares from place to place. Altogether they were a vast improvement over the roads which they replaced—roads which were scarcely more than Indian trails, of use to a man on horseback but impassable for a wheeled vehicle. There were two serious disadvantages to these turnpikes: they were so expensive to build that they could not be extended to small outlying settlements, and the transportation of goods over them for any distance was very costly.

Rivers and canals. Fortunately the country is very generously served by rivers. The Connecticut, the Hudson, the Delaware, and the Potomac all enabled the hunters, lumbermen, and farmers to transport their products to the seaboard markets. When the westward movement began, the Ohio and the Mississippi furnished a highway from settlement to settlement and finally to the



THE MISSISSIPPI AT NEW ORLEANS IN 1832

Notice the forest of masts indicating the extensive shipping carried on at that port

flourishing port of New Orleans. The following description of trade on the Mississippi is given by Levi Woodbury, who wrote in 1833 as follows:

At every village we find from ten to twenty flat-bottom boats, which besides corn on the ear, pork, bacon, flour, whiskey, cattle, and fowls, have a great assortment of notions from Cincinnati and elsewhere. Among them are brooms, cabinet-furniture, cider, plows, apples, cordage, etc. They remain in one place until all is sold out, if the demand be brisk; if not, they move farther down. After all is sold they dispose of their boat and return with the crews by the steamers to their homes.

The use of rivers had been greatly facilitated by the invention of the steamboat (1807). Up to that time it had been a very easy matter to float goods downstream with the current, but it was

so difficult to work a boat upstream that practically all the commerce on rivers with a strong current flowed one way. With the aid of the steamboat the trade on the Mississippi grew steadily until the Civil War broke out. New Orleans became one of our greatest seaports, all the river ports along its banks flourished, and the farming country accessible to these ports prospered exceedingly.

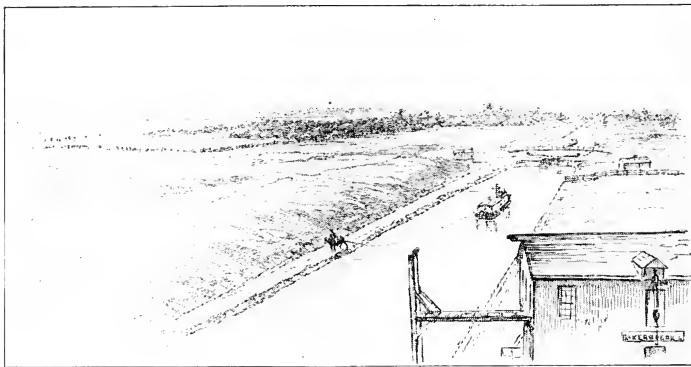


STEAMBOAT ON THE MISSISSIPPI, 1832

Canals. Unfortunately there were somewhat settled portions of the West which were not touched by natural waterways or whose waterways did not lead to markets. Such, for instance, was the region included in western New York, western Pennsylvania, and Ohio. The natural markets for the products of this region were New York, Philadelphia, and the New England ports which were reached by the coasting trade from these two distributing points. The cost of freight brought overland was prohibitive. From Buffalo to New York City the rate was a hundred dollars a ton and the time required twenty days. It paid the farmer of southern Ohio better to allow his wheat to rot on the ground than try to send it to New York. To meet this need the Erie Canal was planned. This canal, running from Buffalo to Albany, connected Lake Erie with the Hudson River. With the completion of the canal in 1825 freight rates dropped to ten dollars a ton

from Buffalo and the time was reduced to eight days. The canal was an instant success. It did a thriving business, and the towns along its route grew rapidly.

The Erie Canal was followed by a fury of canal-building. The Ohio Canal, between Cleveland and Portsmouth, connected Lake Erie with the Ohio River (1832); the Raritan Canal connected the Delaware and the Raritan Rivers in 1838; a combination of canals and portage railway connected Philadelphia and Pittsburgh



WESTERN END OF THE GREAT ERIE CANAL IN 1832

in 1834. These artificial waterways made the Hudson and the Great Lakes of more service to commerce, and they also did much to increase the prosperity of the country, both East and West, by permitting the rapid development of our natural resources.

Railroad-building. Canal-building was scarcely under way when the same thing happened here that happened in England—the railroad appeared with its rival claims and soon proved its superiority as a means of transportation. A small piece of the Baltimore and Ohio, which was begun in 1828 and opened for traffic in 1830, is generally considered the first railroad in the United States. At first horses were used to pull the cars on this road, but in less than two years a steam locomotive was decided upon as the best motive power. It was not until 1841 that the railroad

proved its worth. In that year the Western Railroad was completed between Albany and Boston. Ever since the Erie Canal had been built New York had been advancing very rapidly as a commercial center, while Boston found itself sidetracked. Goods between the West and Boston passed through the hands of merchants of Philadelphia or New York, and the export business of the country was falling more and more to these cities. Upon the opening of the Western Railroad, Boston came into her own once



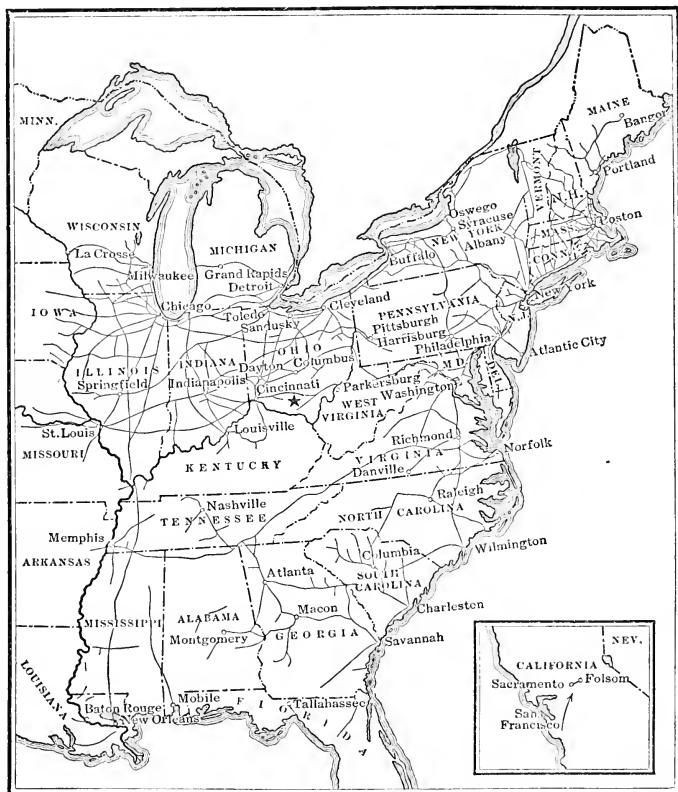
BUFFALO IN 1832

more. Western produce intended for New England was transferred from canal boat to train at Albany and came straight through to Boston, and that city regained much of her lost prosperity. Here was unquestionable proof of the value of the railroad.

Just as the success of the Erie Canal had stimulated canal-building, so the success of the Western Railroad encouraged the construction of railroad lines. In 1854 the Pennsylvania Railroad was finished between Philadelphia and Pittsburgh. Before that year large sections of the New York Central, New York and Erie, and the Baltimore and Ohio were completed and in operation.

Although railroad-building progressed rapidly, most of the railroads were short lines connecting important places or serving to carry freight from the interior to a port on lake, river, or ocean.

They were most numerous in the more settled parts of the country, such as New England, New York, New Jersey, Pennsylvania, and the region just south of the Great Lakes. Gradually the



RAILROADS IN THE UNITED STATES IN 1860

Notice the large number of short lines and the absence of any transcontinental lines

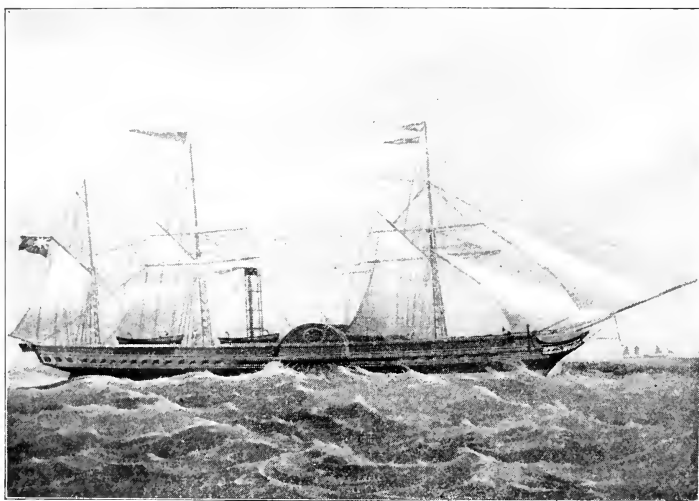
short lines were connected up, so that by 1860 there were through connections between Chicago and New York and St. Louis and New York.

The railroads rapidly took the business away from the canals, for they were much quicker and reached localities which were untouched by the canals. Even more than the canals they hastened the growth of industry both East and West. With a quick and inexpensive means of transportation for the manufactured goods of New England and New York to the West and South, the Eastern mills were able to increase their output greatly. In the same way the farmer of the West was benefited by the opportunity to buy his tools, clothing, and other manufactured wares at a more reasonable figure and to sell his produce for a higher rate than hitherto. It was the construction of railroads more than anything else which made possible the specialization of each part of the country in the line of production for which it was best fitted.

Foreign trade. After the close of the European wars in 1815 the foreign trade of the United States declined. By 1830 it began to pick up again, and continued to increase, except for two brief periods during the business panics of 1837 and 1857. The imports still included large quantities of European-manufactured goods, which found their largest market in the South, although they often entered at a Northern port. From the West Indies and South America came sugar, coffee, and cocoa; from China and India came textiles (especially of silk), also tea and china. Our exports were still largely the products of the primary industries. From the South went cotton (the largest single export of the country) and tobacco; from the West wheat, corn, and flour; from the East some manufactured goods, whale oil, and lumber. Although the foreign trade of the country was always small when compared to the domestic trade, it served to encourage the production of those wares which found a foreign market.

Merchant marine. Until just before the Civil War the growth of our merchant marine kept pace with the growth of our foreign commerce. More than half of our exports and imports were carried in American-built and American-owned ships. For the most part these ships were sailing vessels made of wood, and this in spite of the fact that by 1840 England was building iron

ships propelled by steam for ocean travel. There were several reasons why the Americans clung to the wooden ships. In the first place, they were cheaper to build. Our iron industry was not as far advanced as that of England, and we had not introduced the improvements which made the production of iron and steel as cheap as it was in that country, but we had excellent



R. M. S. *BRITANNIA*, BUILT IN 1840

This was one of the early English steamships. Notice the wooden paddle on the side

and available timber for ships. Then we had invented the American clipper, which was so constructed that it required only two thirds of the crew necessary on an English ship, and it crossed the ocean three times while the English steamships were crossing twice. As it was cheaper to build, cheaper to run, and made better time than the English steamship, it is easy to see why the American shipbuilders and American masters took little interest in developing steel steamboats. Unfortunately they were very shortsighted in this, and American commerce has suffered

from their shortsightedness ever since. The American clipper was the finest wooden sailing vessel which could be made, and in making it the shipbuilder had gone as far as anyone could go in this line. On the other hand, the steamship made of iron or steel was capable of infinite improvement. Although the English steamship could not compete in 1850 with the clipper, by 1860 the improved models were passing the clippers on the seas, and the advantage which they won then they have improved upon ever since. By the time we woke up to the needs of the hour, the English had gained a firm hold on the commerce of the world.

In spite of the mistakes of the American shipbuilders, the shipbuilding industry prospered exceedingly during this period. It centered largely, as it had in colonial times, along the coast of Maine and Massachusetts, although some shipbuilding yards were growing up on the Delaware and Chesapeake Bay.

TOPICS FOR DISCUSSION

1. What brought the Industrial Revolution in the United States in the early nineteenth century?
2. Why did manufacturing advance less rapidly here after the introduction of machinery than in England?
3. What was the effect of our westward movement on the development of industry?
4. Why were both state and national governments ready to finance road-building, canal-building, and railroad-building?

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CHAPTER XVIII

THE CIVIL WAR

Industry in 1861. Despite the panic of 1857 the country was in a very flourishing condition in 1861. The population had reached 31,000,000 as compared with a little less than 4,000,000 in 1790. Of the 31,000,000, about 4,500,000 were slaves and 4,000,000 more were foreign-born. For the past fifteen years there had been a large immigration of Irish, German, English, and French. A great majority of these immigrants were of the laboring class and helped to supply the crying need for labor on our railroads and farms and in our factories. A few, especially of the German political refugees, who fled to this country to escape punishment for their share in the uprisings against the German and Austrian governments in 1848, were people of some means and brought capital and business experience to the land of their adoption. Both classes increased the production of the country and, at the same time, enlarged the domestic market of farmer and manufacturer.

Although wealth had increased even more rapidly than the population, so much more undeveloped wealth lay in the earth awaiting the pick of the miner or the plow of the farmer that the great problem was how to get together the capital necessary to develop the resources of the country. One solution was to charter corporations which would bring together the surplus wealth of a large number of persons no one of whom had enough to accomplish much by himself. Charters were granted freely by the state governments, and the laws governing this form of organization were so lax that many frauds were committed by unscrupulous men who took advantage of their laxity. However, opportunities for making money were so great that companies which rested on a very

shaky foundation often succeeded in paying the stockholders satisfactory dividends eventually, in spite of this handicap.

Most industries were still carried on in comparatively small manufacturing plants which were widely distributed through the East and Middle West. There were no such enormous industrial plants as exist today, and no industry was so largely concentrated in a few localities as at present. For instance, there were small flour mills in a thousand localities instead of large groups of mills in a few places as we have now. The iron industry was scattered about the country in this fashion and still amounted to very little, as most of our iron and steel goods were imported from England.

New England. The great exception to this general statement was the textile industry. From the introduction of factory production of textiles this industry had been largely concentrated in the New England States. By 1861 the cotton mills of that district had reached considerable size. The small mill where the owner worked with his people was disappearing, and the wage-earning class was becoming distinct from the capitalist class in that part of the country. This distinction was accentuated by the fact that the owners were natives, while immigrants were taking the place of the farmers' daughters, who were the operatives in the early days of the factory. As the wage-earning class became conscious of interests distinct from the managing and capitalist class, trade-unions were formed to increase wages and to shorten hours. At first these unions were very temporary, but in 1861 they had become permanent affairs.

In one other respect New England was changing. The farms which had fed the district were giving up all attempts to raise grain and live stock, which were produced so much more cheaply on the rich Western lands, and were confining their attention to fruit, vegetables, and dairy products, which would not stand transportation from the West. More and more the mill hands were fed from the Ohio valley and the region of the Great Lakes.

The South in 1861. By 1861 a great change had taken place in the South. Cotton, which had been raised only very sparingly

in the colonial period, had become the all-important crop in South Carolina, Georgia, Alabama, Louisiana, and Texas. And this revolution was due to a simple little machine known as the cotton gin, invented by Eli Whitney in 1793. In order to understand the great importance of this invention, one must remember that the cleaning of the seed from the cotton wool before the latter could



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PICKING COTTON IN THE SOUTH

be carded and spun was so slow that a slave working all day could not clean more than a pound of the ordinary cotton. Although the slave did not receive wages, the master paid for his work in the original purchase price and in the cost of his food and clothes and shelter, and the expense of a day's work was no small matter. Because the Southern cotton cost so much to produce, it could not be sold in Europe, where the cotton from India could be had for less money. The low price of the Indian cotton was due to cheaper labor in India, where there was a large population with a low standard of living. By means of the cotton gin one man was able to clean three hundred pounds of cotton in a day. Immediately it became profitable to raise cotton for the mills of England.

By 1861 five million bales a year were being produced, and most of this came from plantations worked by slave labor. Some of the Southern plantations contained as much as ten thousand

acres and employed hundreds of slaves, and on most of them the acreage ran into the thousands. As a plantation was often sold for \$100,000, and a good field hand cost \$1400, a plantation stocked with slaves represented a large investment. Nothing but a steadily increasing demand for cotton the world over could have brought such an extensive industry into existence in a country where capital was so scarce as it was here. Although the price of cotton fell steadily, the cost of production also fell, and the profits from its culture continued to be so great that many of the planters gave up all attempts to raise any other crop and depended upon buying the food for their slaves as well as everything else used on the plantation.

In the uplands, where cotton would not grow well, there were small farms owned by the poor whites. These were run with a view to providing for the wants of the family rather than raising a staple crop for sale. North of the Cotton Belt tobacco was still an important crop, and in Louisiana sugar was raised. Everywhere the South was distinctly agricultural, and everywhere agriculture was carried on in the colonial fashion, with simple tools and much hard labor. This was made necessary by the employment of African slaves. Such people could hardly be taught to handle machinery, and so it was no use for the Southern farmer or planter to buy it.

The West in 1861. In the Middle West the situation was very different. Here the farms were of moderate size, each was farmed by the owner and his family with the help of some hired labor, and a sufficient variety of crops were raised to provide for the needs of the household. The great staples which were sent east, south, and to Europe were wheat, corn, and meat. Up to 1830 much of the farming was done by hand, but after 1830 farm machinery was rapidly introduced. The threshing machine in that year began to take the place of hand-threshing with a flail. The McCormick reaper, for cutting all kinds of grains, was being adopted ten years later by the more progressive farmers. Soon horse hoes, seed sowers, and cultivators drawn by horses were proving their value to those who had the capital to buy

them and the good sense to use them. The employment of machinery and the fertile soil of the newly opened West enabled the farmer to produce cereals and meat so cheaply that he could pay the freight on his crops to New England or even to Europe and still undersell the native farmer in his home market. This gave the West so large a market that no matter how fast the population grew, everyone could make a good living. This

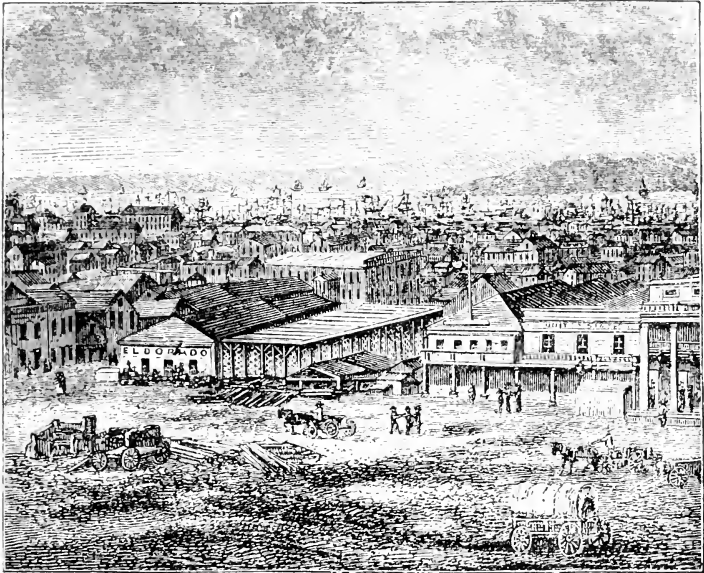


THE FIRST HAND-RAKE REAPER, INVENTED BY CYRUS McCORMICK
IN 1831

prosperity was also due to the construction of canals and railroads, which had very greatly reduced the freight rates to the Atlantic seaboard.

The frontier in 1861. By 1861 there was a fourth section of the country to be considered—the Pacific coast. Here frontier conditions prevailed to a large extent. No railroads connected these settlements with the rest of the country, but goods were exchanged between the Atlantic and the Pacific coasts by the sailing vessels which rounded Cape Horn. In some cases the shorter but more difficult route across the Isthmus of Panama was taken. In one respect California differed materially from most outlying places. Because of the discovery of gold the inhabitants had a large purchasing power. They were ready to pay the high

cost of manufactured goods which had been brought half round the world to them. In response to the needs of the gold miners the industry of food-canning, which had just been started in New York, developed rapidly, and canned vegetables and meats were sent thousands of miles to the one state in the Union which should

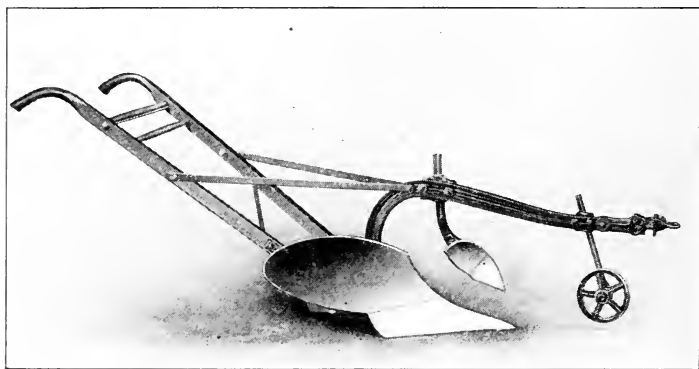


EAST SIDE OF PORTSMOUTH SQUARE, SAN FRANCISCO, IN THE
SPRING OF 1850

have had least need of them. On the whole, however, the Pacific coast played but a small part in our industrial development until a later period.

Effect of the Civil War on industry. The Civil War, which broke out in 1861 and was not over until 1865, had a far-reaching effect upon our industrial as well as our political institutions. Just as in the recent war, the country was called upon suddenly to produce food, clothing, and ammunition for immense armies at the very time when millions of men were withdrawn from industry.

Prices rose rapidly, and this encouraged the greatest possible production. In order to protect the home manufacturer, who was having to pay greatly increased manufacturing costs, and at the same time to raise the necessary revenue a very high tariff was laid on all imports. This still further stimulated industry. Manufacturers seized upon every means to increase production. The most promising that offered were new machines which were being invented to take the place of hand labor. With the large returns which



A MODERN PLOW

factories earned, plants were extended, old equipment was thrown on the scrap heap in favor of better and more efficient machines, and tradition went the same way.

The introduction of machinery proceeded as rapidly on the farm as in the workshop. It has sometimes been said that the McCormick reaper won the war for the North, and with the following facts in mind one is tempted to accept that statement at its face value. Before the war started, Indiana produced in a year 15,000,000 bushels of wheat; in 1863 the state produced 20,000,000 bushels, with one tenth of her male population in the army.

The effect of the war on the South was even greater than upon other parts of the country. In the first place, the war broke up

slavery and substituted for it hired labor. The readjustment from one system to the other was a very difficult one, for in many places the negroes refused to work at all. The planters went bankrupt, and many of the plantations were broken up and sold as small farms. In time matters straightened out and agriculture revived on the new basis.

On the whole, the war had greatly hastened progress along industrial lines, and the country came out of the struggle with the strength to compete with the greatest nations of the world for first place in industry. In one respect only had we suffered an irreparable loss. Our merchant marine had been driven from the seas by the Confederate privateers, and England had taken over the carrying trade which had dropped from our hands. On account of the superior steamboats of iron which she was building we were not in a position to win it back. Our commerce was still further handicapped with government regulations which made it very expensive to operate a boat under the American flag. Until 1914 we remained an insignificant factor in the carrying trade of the high seas.

TOPICS FOR DISCUSSION

1. What was the condition of the country when the Civil War broke out?
2. What was the effect of the war on industry and commerce?
3. Compare the effect of the Civil War on the United States with the effect of the World War on Europe.

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CHAPTER XIX

INDUSTRY IN THE UNITED STATES SINCE 1865

Changes of the period. In the half century which has intervened between the close of the Civil War and the outbreak of the World War, the industries of the United States have been revolutionized. The extractive industries, mining and farming, have grown enormously, but their progress has been overshadowed by the astounding advance made in manufactures. In a dozen industries we have leaped from third or fourth to first place among the nations of the world, far outdistancing our former rivals. This rapid development was partly the result and partly the cause of certain other changes which marked the period, such as the rapid increase in our population and the vast extension of our transportation facilities.

Population. In 1865 our population amounted to 31,000,000, of which number only about 4,000,000 were foreign-born; in 1914 the population of this country had reached 100,000,000. This growth was due in part to the natural increase in the population and in part to the large immigration, which ran from half a million to a million a year in the last decade. The larger population stimulated industry in two ways: first, by providing labor, and, secondly, by providing a larger domestic market for our manufactures..

Territorial additions. Since the Civil War the United States has made some gains of territory, although these additions have not influenced our industrial growth as yet to any such extent as those made before the war. Alaska, Hawaii, Porto Rico, and the Philippines have varied the raw materials produced under the Stars and Stripes and extended our market a little, but they play a small part in our economic life when compared with the resources and the market offered by continental United States.

Transportation facilities. 1. *Ocean freight.* Better transportation facilities by land and sea have been more influential than any other one factor in the growth of American industries. Although the United States has done little for ocean transportation, England, Germany, and the Scandinavian countries have each built up a most efficient merchant marine. Rates have been steadily



ROYAL GORGE OF THE ARKANSAS RIVER BEFORE AND AFTER THE
RAILROAD WAS BUILT

This bit of road illustrates some of the difficulties which confronted
American engineers

lowered and the time consumed in transit reduced. The result has been that the supplies of raw materials needed for our factories have been brought here from all parts of the earth at a cost which makes their manufacture profitable, and American goods can reach the markets of the world with equal facility.

2. *Railroads.* The development of the railroad system of the country has had a far greater effect on our industrial development than the facilities for foreign commerce, for a very large proportion of all our products has always been consumed by the people

of this country. In 1861 there were no railroads of any account beyond the Mississippi River. Immediately upon the outbreak of the war the need of a transcontinental railroad became evident, and Congress passed an act in 1862 for the purpose of assisting in the building of such a road. Eventually the line was built in two sections—the Union Pacific from Omaha to Ogden, and the Central Pacific, from Ogden to Sacramento. Government assistance took the form of loans of money and the grant of twelve million acres of public land to the Union Pacific and eight million acres to the Central Pacific.

The construction of the line was carried through in the face of the greatest difficulties.

There were difficulties from end to end : from high and steep mountains ; from snows ; from deserts, where there was a scarcity of water, and from gorges and flats, where there was an excess ; difficulties from cold and heat ; from a scarcity of timber and from obstructions of rock ; difficulties in keeping a large force on a long line ; from Indians ; and from want of labor.—C. P. HUNTINGTON

The labor problem was solved by the employment of Chinese laborers after vain efforts to obtain a reliable and permanent force of white workmen. The danger from the Indians was very real. Engineers and workmen who became separated from the parties with which they were working were killed and scalped. Men worked with their rifles beside them and were frequently called upon to use them to protect the supplies and railroad equipment as well as their own lives. After a time the Indians resigned themselves to the inevitable, made a treaty with the white men, and peace reigned. Some of the erstwhile warriors entered the employ of the railroad, and with pick and shovel helped to complete the work that they had so long desperately opposed. In 1869, on May 10, the last spike was driven and the Atlantic and Pacific coasts were connected by rail.

Other lines across the continent followed in due course, and innumerable short strips of road were built to serve the more thickly populated districts both in the East and in the West. At

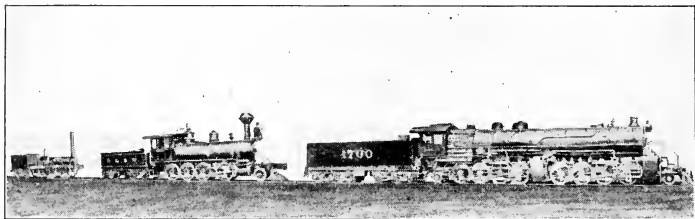
the same time various improvements were being made in the old lines. Steel rails were substituted for iron in 1870 and proved a great advantage, as they stood the strain of the heavier locomotives and trains better than the iron and wooden rails which had preceded them.

a. Steel rails and bridges. Nine years later steel solved another problem. It was very difficult to build bridges strong enough to carry an engine and train, and it was impossible to span wide and deep streams with the type of construction then in use. When the first steel bridge was built, in 1879, almost unlimited possibilities in bridge-making were opened up.

b. Standard gauge. By 1861 the short spurs of railroad originally built had been connected up so that one could go by rail from the cities of the East to the Mississippi River. This does not mean that one boarded a train in Boston and got off that train in St. Louis. Both passengers and freight must change cars many times, even on comparatively short journeys. The short lines were due originally to the fact that no one railroad company could get together sufficient capital to build a long line. This difficulty had been partly obviated before 1861, when a few large companies, such as the New York Central, had bought up a large number of short lines and proceeded to operate them as one. There were other obstacles which were not so easily removed. Some railroads were built with a distance of 6 feet between the rails, while some were only 4 feet 10 inches wide. As long as this difference of gauge existed, it was impossible to switch cars from one road to another; both freight and passengers must be transferred from train to train, no matter how great the expense and inconvenience of the change. In 1876 a general movement began to adopt the 4-foot 8½-inch gauge, which is the standard gauge at the present time. This change to a uniform width of track made possible the through-train service which has so greatly increased the comfort of traveling; it also made possible the shipment of freight by carloads from one end of the country to the other. This saved an immense amount of time which had been consumed in transferring goods from one train to

another and also much money wasted in the same way. To estimate fairly the value of this, one must remember that a ton of freight travels for less than a cent a mile on the railroads. That same ton runs up a bill of a dollar or more if it is carried from one station to another or even moved from car to car under the same station roof. The passenger who rides in a comfortable coach for two or three cents a mile pays a hackman from twenty-five to fifty cents to go a mile from one station to another.

c. Powerful engines, steel cars, etc. Other economies have been accomplished in transportation by increasing the scale on which the business is done. Larger cars have been built and



Courtesy of the Philadelphia Museums

ENGINES OF 1832, 1876, AND 1909 COMPARED

longer trains are drawn by a single locomotive. These changes have necessitated more powerful engines to draw the heavier loads and stronger cars to stand the strain of greater freight. Wooden cars have been replaced by steel-framed cars, and now these are being replaced in their turn by all-steel cars. Both freight trains and passenger trains are run at a far greater speed than was possible fifty years ago. As the trains have grown longer and heavier and the great locomotive has acquired an almost frightful force, the rails and bridges have had a more serious strain to meet. In response to the need they have been made heavier and stronger in each succeeding decade. Innumerable improvements in brakes, signal devices, terminal facilities, and roadbed have all contributed to make possible the great speed and low cost of our transportation service. In summing up the railroad expansion since the Civil War a few figures will make

the matter clearer than any amount of description. In 1860 there were 30,635 miles of railroad in the United States; in 1910 there were 238,609 miles. In 1868 it cost 42.6 cents to bring a bushel of wheat from Chicago to New York by rail; in 1910 the cost was 9.6 cents. As late as 1871 the average rate for carrying a ton of goods a mile was about two cents, while in 1910 it had dropped to three fourths of a cent.

d. Effect of railroad expansion on industry. The great increase in the size and efficiency of the railroad system has had a tremendous effect upon the development of the industries of the country, just as did the building of the early railroads upon the industries of their time. With the low freight rates and the large number of places and people which the railroads reach, a manufacturer or farmer in any part of the country may easily and cheaply get his goods to a market which practically includes the whole country. Such an enormous possible market encourages production on a large scale; in fact, it was chiefly the great domestic market which the rapid growth of our population—accompanied by the equally rapid extension of the railroad systems of the country—created that made possible the mushroom growth of industry.

Competition and efficiency. At first the market expanded so rapidly that even wasteful and careless methods of production brought returns, but as competition has increased, manufacturers have been led to aim more and more at efficiency in production. Efficiency is nothing more than producing the best possible goods at the least possible cost; in other words, every particle of waste in labor, material, use of capital, or selling expense must be eliminated by the manufacturer who wishes to make his plant truly efficient. To accomplish this he must know the exact cost of the goods he produces in labor, material, etc. and make certain that each element in his manufacturing expense is as low as it can be made.

The first move toward greater efficiency was the use of more and better machinery. At the close of the Civil War almost every line of production involved much handwork in connection

with the machine work. The machines then in use have been greatly improved upon so as to leave less and less work to be done by hand, and a great number of new machines have been invented, such as the McKay sewing machine for sewing shoes, the lasting machine used in the same industry, steam shovels for digging ditches, electric cranes for moving heavy weights, compressed-air riveting machines, and countless more. The supply of power to run machinery is also provided by new and better engines. The steam engines set the mills free of the waterways to which they had been tied hitherto, but these have not been able to maintain their place in all localities. In turn they have been succeeded for some purposes by electric motors and gasoline engines. Invention and improvement have gone so far in the boot and shoe industry that "the human hand does little but guide the material from machine to machine, and the hammering, the stamping, and the sewing are all done by the tireless energy of steam."

Utilization of by-products. Another movement toward greater efficiency in production has come through the utilization of the by-products of industry. Although this has taken place in almost every industry to some extent, two cases will be sufficient to illustrate it—the cottonseed manufactures and the meat-packing industry. In the old days, when the seed was removed from the cotton, it was thrown away; now the oil is pressed from the seed and made into salad oil, oleomargarine, lard, or soap. The cottonseed meal which remains after the oil has been extracted is fed to stock, as are also the hulls and stalks of the cotton. What was once mere refuse, to be disposed of in the easiest way, is now the material for a number of valuable manufactures. Very much the same change has come over the meat-packing industries. Parts that formerly went to waste, such as hoofs, horns, bones, hair, bristles, fat, intestines, and blood, are now made into soap, glue, fertilizers, knife handles, combs, buttons, and glycerin. It is sometimes said that all the profits of the meat-packing business arise from these by-products. Certainly the conversion of what was formerly waste into articles of value enables the meat-packers

to sell meat for less than is possible for establishments conducted on the less efficient methods of fifty years ago. Such economies of production as these are only possible in large establishments, for only in places where there are large quantities of hoofs would it pay to establish a glue factory in connection with a packing-house. It would not even be worth while to send a large quantity of hoofs any distance to a factory, as the expense of marketing and transportation would eat up all the profit.

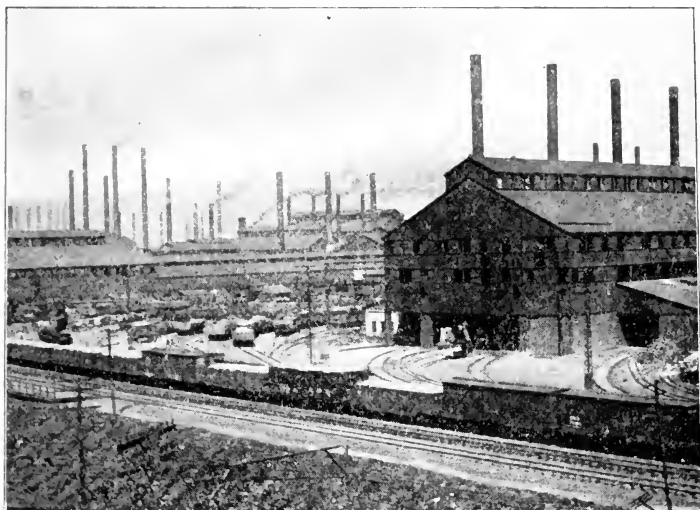
Large-scale production. As there are many other economies which production on a large scale makes possible, there has been a tendency ever since the Civil War to extend the size of industrial plants rather than to increase the number of such plants. In a few industries the whole production of the country has been concentrated in a small number of enormous establishments. There are many advantages enjoyed by a large business over a small one in addition to those already mentioned. Management may be subdivided so as to employ specialists for each branch of the work, and a greater use may be made of machinery. As the establishment expands, more and more the work is subdivided, until each worker handles only a very simple process. This has two results: in the first place, the worker becomes very expert in that one process, and, in the second, a machine can often be invented to perform the operations when they have been reduced to this simple form. In a large plant it is possible to buy machines to perform a very small part of the work because with the large total production there will be enough to keep that machine busy. In the same way management has been subdivided. An expert purchasing agent is kept busy all the time buying supplies for the factory; an experienced factory manager with a corps of assistants is employed to manage the factory; efficiency engineers are employed to study every part of the work to discover, if possible, any waste of time, power, or material; expert salesmen dispose of the product; and experienced financiers procure additional capital for expanding the industry and determine what dividends to pay to the stockholders, how much to put back into the business, and a thousand other questions upon the right solution of which the

financial soundness of the business rests. The employment of experts in the management of a concern gives it a marked advantage over its smaller rivals, which are unable to follow the same policy, and frequently the large house is able to undersell and drive the smaller houses out of business. Here we have an explanation of the increase in the number of large plants and the disappearance of small ones.

Trusts and monopolies. The greater efficiency possible to large-scale production has led to a further consolidation of industrial establishments, which has produced what is commonly known as the trust. If it was profitable to produce goods on a large scale, it was still more profitable for one concern to carry goods through every stage of manufacture. In the steel business it had been customary for one group of industries to smelt ore and sell the pig iron to the steel manufacturers, who made it into steel and sold it again to the manufacturers of locomotives, bridges, rails, armor plate, and hardware. Each handler of the goods took a profit, and each was inclined to run up the price of his wares as much as possible in time of strong demand. When times were poor again prices dropped below the cost of production, plants were obliged to close down, and there was great loss occasioned by the necessity of allowing expensive equipment to lie idle.

Gradually the better-managed companies began to take in two or more processes. In time they were mining their own ore, smelting it, making it into steel, and rolling the steel into rails without once allowing the metal to get cold. Such consolidation came about sometimes by the addition of new plants and sometimes by buying out or joining with other plants already in existence. The final move which gave us the United States Steel Corporation took place in 1901, when the Carnegie Steel Company, the Federal Steel Company, and the National Steel Company united with a steel trust which was composed of the American Steel and Wire Company, the American Bridge, the National Tube, the American Tin Plate, the American Steel Hoop, and other companies. The first group was made up of the manufacturers of steel, while the

second group was composed of companies engaged in the finishing processes. This corporation owns vast deposits of iron in various parts of the world—the most famous being those in the Lake Superior region—and controls steamship lines which carry its ore from the mines to a port on Lake Erie, where it is loaded at the company's dock by especially constructed machinery on the



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STEEL WORKS IN PENNSYLVANIA

cars owned by the company and carried over a railroad, also owned by the company, to Pittsburgh, where it is manufactured into finished goods. Such a consolidation of all the processes connected with the manufacture of steel wares is an extreme illustration of what is taking place in many industries. This consolidation has great advantages as well as great dangers. It has made possible the introduction of great economies in the production of goods, and these economies have resulted in somewhat lower prices to the consumer, better wages to the workers in the industry, and more regular dividends to the stockholders.

In spite of these evident advantages trusts have been looked upon with fear and suspicion by the great mass of the people of this country. The reason for such an attitude is this: most trusts are, to all intents and purposes, monopolies. This does not mean that any great company actually controls the entire production in its line, but many do control such a large part of the production that the prices which they set must be adhered to by their few competitors. Such is the case with the United States Steel Corporation, which controls two thirds of the steel output of the country. Furthermore, it is feared that at any time this giant corporation may choose to undersell its few remaining competitors and so take business away from them until they are driven to sell out to the trust. Then there would be nothing to prevent the trust from charging as high prices as it chose. It seems to many people that the old system of competition is passing away, and as yet they cannot be quite sure what will come in its place. Even though they realize that competition caused a waste for which the consumer was obliged to pay in the end, they fear a change. The dangers from monopolies are more apparent than real when we realize that the community has a weapon with which to protect itself in the organized government which the people control. That government may, if the people wish it, regulate industry in the interest of the worker and the consumer.

While the tide has apparently been setting in the direction of large-scale production, there has been a back current going the opposite way. Large farms tend to disappear because they are less efficient than the middle-sized farms, which are suitable for family operation and management. Even in manufacturing, while the trust movement was at its height, there was also a recessive movement, many small or moderate-sized establishments rising and flourishing. There are more of such establishments today than ever, and they are, on the whole, holding their share of the business except in a few industries such as steel and railroading.

Raising the efficiency of the worker. For many years manufacturers looked chiefly to better machinery and more effective organization to increase the efficiency of their plants. In time

the more progressive among them came to see that no matter how excellent the machinery and financing, the purchasing, selling, and managing, if the worker was not doing his part efficiently the production of the plant was less than it should be. Investigation showed that better work was done when the worker was occupied under favorable conditions, paid fairly, and kept at work only a reasonable number of hours, as such conditions enabled him to enjoy good health. It was also of the utmost importance that the worker be put into a job for which he was suited and that he be developed through education in the technic of the work in which he was engaged. Although the war has given a strong impulse to advance along these lines, the ideas which they embody are still so new that many employers are not yet alive to the importance to themselves of these movements.

Improved housing. One of the first improvements to be made in working conditions was the construction of better factory buildings. Early factory buildings were often old sheds in which a machine was set up as an experiment. Sometimes, as the business grew, fine brick or stone structures were put up, and one sees many such in the New England factory towns. Even these buildings, fine as they were for their time, answer but poorly the purposes for which they were intended, as the windows are small and far apart and the heating and sanitary arrangements are inadequate when judged by modern standards. With the recent demand for better conditions for the worker, a new type of factory building has appeared. The frame is of steel, and the walls are of brick or concrete ; great windows, which take up most of the outside walls, admit light and air ; and excellent heating and lighting arrangements are provided.

1. *Health, protection, and welfare.* To protect the workers from injury, safety devices are provided which do much to prevent the accidents which were formerly so frequent. But many factories go farther than this, and furnish a doctor who examines incoming employees and gives advice either free or for a nominal fee. In some places there is also a nurse who attends those hurt in the factory and visits the homes of workers who are ill. Lunch rooms

are also maintained where the employees may obtain a nourishing lunch at cost, and recreation rooms, tennis courts, and ball fields form a part of the equipment which is at the disposal of the workers for healthful enjoyment.

2. *Higher wages and shorter hours.* While most employers are not able to see the advantages to themselves of paying more wages for shorter hours of work, the fact remains that both increase the efficiency of the workers. Very often the poor home, insufficient food, and unsuitable clothing for which low wages are responsible tell seriously against the quality and quantity of goods turned out by an underpaid worker. Provided he has intelligence enough to spend his money wisely, a higher wage will pay in that his production will increase. In much the same way shorter hours often rebound to the advantage of the employer. It has been proved over and over again that in many lines of work the workers will accomplish more week after week in an eight-hour day than in a ten-hour day, for the man who comes to his work in the morning tired will accomplish less in the ten hours than he would in eight hours if he worked with some enthusiasm. Although shorter hours and better pay have been obtained largely through the activities of the labor unions and an enlightened public opinion, it is well to bear in mind that both are closely related to the efficiency of the worker.

3. *Employment department and educational department.* Plenty of light, a hot lunch, and good pay will not, unaided, make an efficient worker. To be that a man must acquire, if he does not already possess it, a certain amount of technical knowledge about the operation which he is to be called upon to perform, and he must be by nature suited to the work. In the old days the choosing as well as the training of employees was left very much to chance. When a new man came in he was put wherever there happened to be a vacancy, the man next him or the boss of the section showed him what to do and how to do it, and if he did not take hold of his job in a way to satisfy the man over him he was fired. This thing went on for many years before it occurred to anyone that it was a very extravagant way to

manage. When accountants began to figure up they discovered that every new person employed cost a company from fifty dollars to five hundred dollars or more in spoiled work, injuries to machinery, and the time of other workers spent in teaching the newcomer.

Immediately managers set about reducing the labor turnover, and they found there were two points of attack. In the first place, someone must see that the people employed were suited by nature and education for the positions which they were to fill, and, in the second place, they must be properly taught those things about this particular business which they ought to know. To accomplish the first a competent person was put in charge of the hiring and discharging of workers. Such a person studies every job in the establishment and estimates what type of person is qualified to fill it. Next he studies the applicants whom he is called upon to consider. By means of tests and interviews he can usually determine with a fair degree of accuracy to what type the applicant belongs. When a mistake has been made in placing a worker it is often possible for the employment manager to shift the worker to another position where what he has learned will still help him, and in this way some of the expense of the labor turnover is saved. The second difficulty is met by creating an educational department or department of training. Here newcomers are trained by competent teachers for the work they are to do. Although no one has as yet discovered any infallible test for deciding what work people are best fitted for and no sure way of teaching them to succeed in any line of work, much has been done to cut down the labor turnover by the establishment of employment departments and training schools. The advantage to the worker is quite as great as to the employer.

Rise of labor unions. The labor unions of the United States have no such long past to look back upon as the labor unions of England. Until the Civil War they amounted to very little in this country, but since then they have passed through a number of the same phases which marked the development of the unions in England.

Railway brotherhoods. At first the unions were largely trade unions; that is, the membership of each union was limited to those engaged in one particular trade. Among the first to be organized were cigar-makers, bricklayers, iron and steel workers, granite cutters, and railway workers. Of these associations none have had a more interesting history than the railway brotherhoods. The four brotherhoods—the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Engineers, the Brotherhood of Railway Trainmen, and the Order of Railway Conductors—came into existence between 1863 and 1877. All four held up high standards of conduct to their members, exacted heavy dues from which they insured their members, and after one or two disastrous experiences pursued a policy of avoiding strikes. Although these unions sometimes work together, they have all remained outside the American Federation of Labor.

National unions and federation. Almost from the first unions had both local and national organizations; that is, the bricklayers of any fair-sized city were united in a local association which, in turn, formed a part of a bricklayers' national union. As early as 1866 an attempt was made to unite all the national unions and any local unions which were not already affiliated with a larger organization, into a federation. The first attempt soon failed, but it was followed by the organization of the Knights of Labor, which grew slowly into a large, strong association. In 1886 it had a membership of 730,000. Shortly after this it was weakened by engaging in unsuccessful strikes and quarrels with other trade-unions which had refused to join it, and it gradually sank into insignificance. Its place was rapidly taken by the American Federation of Labor, which was organized in 1881. Although the governments of the two are unlike, they are in their general nature very much the same. Both attempt to bring together unions of skilled workers into one great federation.

Industrial unions. So far we have dealt with associations which followed the lines of trade. There have also arisen in this country the industrial unions, which are formed by all workers engaged

in one industry, no matter what the task of each may be. This has the advantage that one single union can deal with the employer in any dispute between a factory owner and his men instead of having three or four unions with which to deal.

Until 1905 there had been little attempt to organize the unskilled workers of the country. Such people, changing as they do from one industry to another, have little to gain by maintaining wages and hours in any one line. As they are usually the lowest-paid workers, it is often difficult for them to pay sufficiently high dues to carry the union through a strike. In spite of the obstacles in the way the radical socialists succeeded in organizing this class of labor to some extent and bringing the local unions together into a national organization with international affiliations, known as the Industrial Workers of the World.

Principles of the I. W. W. The Industrial Workers of the World believe in syndicalism. Syndicalism advocates the entire abolition of the present system of society, as only in this way can the workers be emancipated. The capitalist and the manager of industry are both to disappear. A new system is to be created, based on coöperative organization of production in which the management shall rest on the whole body of the workers. The members of the Industrial Workers of the World have little patience with the struggle of the unions for shorter hours, better conditions of work, or higher pay. To accept such concessions as satisfactory is, in their eyes, like contenting oneself with crumbs when one has a right to the whole loaf. They believe that there is nothing in common between the working class and the employers and that it is the mission of the working classes to do away with capitalism and overthrow the whole present system.

Methods of the I. W. W. The methods of the Industrial Workers of the World are in accord with their principles. As they have but a slender treasury they aim to carry on only short strikes. Instead of fighting out their quarrels in the strike, they resort to sabotage. Sabotage means interfering with the machinery of production without going on strike. It means to strike but stay on the pay roll. It means that instead of leaving the machine the

workers will stay at it and turn out poor work or slow down until they interfere with the profits of the employer to such an extent that he will come round and ask them what is wrong and what he can do to satisfy the people working for him. In many cases they have gone the length of injuring or destroying the property of the employer and using violence to intimidate the bosses and other workmen who were not allied with them. For this reason as well as on account of their revolutionary doctrines they are much feared and hated by organized labor as well as other elements of the population.

Industrial peace. At best, however, the unions have stood for war as a means of settling disputes between the employer and employee. To the modern mind such a method is distasteful in the extreme, and yet society has tolerated a condition which it disapproved from a sense of helplessness. Of late two solutions have offered themselves. Manufacturers' associations have been formed in well-organized industries, and the union and the association have come together upon an agreement which provides for the peaceful settlement of all disputes arising between them. Another means of putting an end to the disturbances which have cost society so dear is by the action of society through the government. More than once the president has stepped in to settle some quarrel which was sacrificing the well-being of the country to the selfish interests of the owners and workers in some essential industry. Such action may be much extended if the needs of the nation require it.

Relation of the government to industry. Ever since the colonies broke away from England, there has been a strong demand on the part of the people that the government interfere as little as possible in industry and commerce. And this policy of noninterference in private business has been generally adhered to until very recently. Here and there circumstances have served to break down the prejudice against government regulation. When the competition of foreign manufacturers seemed likely to strangle our infant industries in 1816 and the years following, the manufacturers were insistent that the government give them aid. The

protective tariff which was imposed at that time has been changed many times since but has never been removed.

Domestic commerce. In the early days of the country's development the Federal government lent its aid in building roads, canals, and railroads, but it was not until 1887 that it attempted to regulate them. In that year the Interstate Commerce Act was passed, which forbade certain practices of the railroads which were unfair to the small shipper and created the Interstate Commerce Commission to enforce its provisions. Since then the railroads have been very thoroughly regulated by the government, until they were finally taken over during the World War.

Curbing the trusts. In 1890 the Sherman Anti-Trust Law was passed for very much the same reason that regulation of the railroads had been undertaken three years before. Great industrial combinations like the Standard Oil Company or the United States Steel Corporation are so very big and powerful that they may do a great deal of harm and cause suffering to the community. The people of the country began to be very much afraid of the power they wielded, just as they had grown afraid of the railroads, and so they took steps through Congress to control and regulate them. Unfortunately neither the people nor the lawmakers were able to see then what most of them have been able to see since—that a large corporation is not bad in itself; it is only bad when it uses its power for evil. Much strength was wasted in trying to break up the big companies instead of trying to make them behave themselves. As a matter of fact, the creation of a world market has brought about these giant industrial organizations, just as the town market led to specialization of industry and the appearance of the craftsman. The next few years will undoubtedly witness a more intelligent handling of this problem by the community.

The Pure Food Law. Through the Pure Food Law the Federal government has stepped in between the manufacturer and the consumer to protect the latter from deception. Under this law harmful adulteration is forbidden, and the manufacturer is obliged to make the description of his wares contained on label or cover conform to the facts. This was made necessary by the rapidly

changing methods of manufacture which rendered it impossible for the consumer to educate himself to be a judge of all he purchased. Unscrupulous makers were able to deceive the public and drive out of business their more honest competitors when they were free to be as untruthful as they wished about their products.

Hours and conditions of labor. Our democratic government is based on the belief that the welfare of each was the business of all. For many years it was assumed that each person could best enjoy "life, liberty, and the pursuit of happiness" if given the greatest possible freedom of action. Of late there has been a strong public sentiment in favor of government regulation for the greater happiness of the people, especially those employed in factories. For this reason most of the states have passed laws to limit the number of hours that workers may be kept at work during any one week, the age at which they may begin to work, and the conditions under which they may be employed. All this is usually done under the guise of caring for the health of the community, but it is bringing into the public mind a consciousness of the responsibility of the community for the work conditions of its members.

On the whole it is evident that the people of this country are gradually overcoming their ancient prejudice against government interference in commerce and industry as the need for government action arises. And more and more the need will arise as people come to see that human life is more important than goods. Business is concerned primarily with the production of wealth. At times efficient methods of production are those most beneficial to the worker, but in other cases the interest of the worker and that of the employer are opposed. For instance, even a manufacturer of most humane inclinations may find himself unable to increase the pay of his employees as long as his competitor across the street is paying the lower rate. Each is selling his goods as low as possible, and any increase in expenses will wipe out the narrow margin of profit. Or a storekeeper may not dare close his store earlier than the man on the next block for fear he will lose enough business by so doing to make the difference between profit and loss. In the latter case a law which compelled both to close

early would keep the game even and at the same time protect the health of the salespeople. Or, in the first case, a minimum-wage law would compel both to increase the pay of their employees, and neither would suffer any disadvantage as a result. If the community steps in with such regulations, the result is usually that the community pays for the change in less convenient hours for shopping, in the one case, or in higher prices in the second. The manufacturer has simply added the increase in his pay roll to the selling price of his goods, and the retailer passes the increase on to the consumer. It is partly for this reason that legislators are slow to pass laws in regard to such matters that would seem at first glance to be most desirable.

Workmen's compensation and insurance. *Industrial accidents.* In another matter the government has stepped in to protect the worker against some of the evils of the modern industrial system. This is the matter of industrial accidents. In spite of all precautions accidents due to the nature of the business occur in all industries. Powder factories blow up and a larger or smaller number of the employees are killed or hurt. A riveter in a shipyard is struck by a rivet let fall by the man above him. In a machine shop a heavy part of a machine is dropped on a man's foot and he is laid up for weeks with a broken bone. It is now well known that in some occupations certain diseases are the direct result of the occupation. Whether accident or disease takes a man from his work the case is very much the same. He is suffering a loss through industry for which he should be compensated as far as possible.

Effects of such accidents on society. It is not only the worker who suffers from such accidents but also his family and society in general. When a worker is killed or disabled his family is usually reduced to want. His children can no longer have proper food and suitable clothing. If the mother goes to work the children run the streets and form evil associations and bad habits. As soon as the law allows they are set to work to help support the family. Instead of growing up to be healthy and useful citizens they go to fill our hospitals, jails, and poorhouses, and so become a tax upon the community in place of being an asset to it.

Possible protection previous to government action. Before governments took up this matter on behalf of society there were two ways in which such an outcome might be avoided. In the first place, a workman might take out insurance. Unfortunately workmen seldom earned enough to insure themselves for a sufficient amount to do any good, and when they did earn enough they were seldom intelligent enough to take out the insurance. In the second place, a workman or his family might sue the company for the damages which he had received. Many workers have obtained compensation through such suits. Two difficulties stood in his way, however. Under our laws, as they stood for many years, the workman was supposed to assume certain risks of the occupation and the company could not be held unless the injury was caused through some fault of theirs. More than this, many small companies could not pay damages commensurate with the injury received, so the judgment against them could never be collected.

Social action. As a stronger consciousness of the responsibility of society for the welfare of its members has developed, governments have passed workmen's compensation and insurance laws to protect workmen and their families against some of the evil results of industrial accidents and occupational diseases. Such legislation was first introduced in Germany. England followed with a series of laws which were very well worked out before the World War began. In this country we are far behind both England and Germany. Each state has a different law, or none at all, and many of the laws as they now stand are still very unsatisfactory.

What the law requires. The more satisfactory of these laws make the following requirements: (1) The employer must insure his employees in a recognized insurance company or else furnish proof that his financial standing is such that he will be in a position to meet in full any charges that he may be called upon to pay; (2) medical attendance must be furnished free for a longer or shorter time; (3) a certain per cent of his salary must be paid to the injured person while he is away from work; (4) in case of total disability either a lump sum must be given to the family or

a pension provided for the wife for life and the children until they come of age; (5) in most states the compensation is not to be paid for the first two weeks of illness. This seems hard, but there is an excellent reason for it. If the worker lost nothing by illness he might be tempted to play sick or even to injure himself slightly for the sake of a vacation. Such things have been known to happen.

Economic theory on which these laws are based. The economic theory upon which these laws are based is well put in Commons's "Labor Legislation":

Compensation to the injured workman is based upon the theory that the consumer of economic goods should bear all the expenses incurred in the production of such goods. Among those expenses must be included the pecuniary losses from deaths and injuries occurring in the regular course of production. If these losses are to be borne by the workman, he indirectly carries a part of the expense of production. In order to avoid this, the expense of work accidents, it is generally agreed, should be treated like all other expenses of production; it should be borne by the employer in the first instance, and be shifted by him, in the form of increased prices, upon the consumer of those goods in the production of which the injuries were sustained.

Our vanishing frontier. Until the end of the nineteenth century there had always been a frontier to attract the venturesome and provide free land for those dissatisfied with the work conditions of the East. This frontier is swiftly vanishing, and the influence which it has exercised upon our economic life is being removed. As long as there were immense undeveloped resources in land, forests, mineral deposits, and water power no attempt was made to use these things in an economical way. Forests were cut over in the manner which gave the owners the greatest immediate profit, with no thought for the future production of lumber. Now that the most available of our resources have been developed, the government is taking care to regulate the use of what is left in such a manner as to give the people of the country the greatest possible benefit from them. At the same time a movement is on foot to make available lands which have hitherto been considered either too dry or too wet for farming.

Conservation of natural resources—public. Great irrigation projects have been undertaken in the Southwest, and drainage schemes have been proposed for Florida and other swamp lands. The conservation of our natural resources has become the war cry of some of the leading statesmen of both parties.

Conservation of natural resources—private. What the government is trying to do with the public lands which still remain in its hands, private individuals are doing, and for the same reason. When it is no longer possible for prospectors to find enormous new coal and iron lands, the value of coal and iron land has risen so that it is worth while for mine owners to work veins which they considered too poor to work before; in fact, some find it worth while to go over their old rubbish heaps and pick out the stuff which they had discarded. This is conservation indeed. Again, the farmer has been affected in much the same way. Where formerly he planted great fields and cultivated them in such a superficial way that he reaped many fewer bushels to the acre than his European contemporary, he is now turning toward more intensive cultivation of the soil as the value of land increases. This change is not due to a patriotic desire to produce as much as possible on the acres of his native land, but rather to a natural response to the laws of profit and loss. When land was cheap and labor was high the superficial cultivation was the more profitable. Now that land is expensive and labor has been made somewhat cheaper by the introduction of machinery, a more thorough cultivation pays.

Effect of the vanishing frontier on labor. As the frontier with its free land disappears, wages are endangered. The necessities of life are made more expensive by the increase in the value of land, so that the wages paid labor are worth less in those things which the laborer wants, and at the same time a depression in industry which throws men out of work is not relieved, as it has been to some extent in the past, by westward emigration. The constant demand for labor to farm and mine on the newly opened lands is also constantly growing less insistent. If other forces had not already entered the field one might fear that the wages of

American labor and the standard of living of the American worker might be driven down to the level of the wages and standard of living of European workers. As it is we are protected to some extent by three forces—the labor unions, our democratic form of government, and the education for efficiency which industry and the public schools are giving. Of the labor unions enough has been said to indicate how they are prepared to resist the depression of wages below a reasonable level. The form of government makes it possible for the worker to regulate industry through the government in such a way as to protect himself. Something has been done already in the passage of laws to limit the hours of labor and to regulate factory conditions, and more along this line will doubtless follow. There is always one great danger in this. Workingmen led by politicians more noted for their power of oratory than for their understanding of economic questions often indulge in a form of regulation which injures industry and so eventually causes more suffering to the worker than did the evils from which he was attempting to escape.

If workers are to have better food, clothing, and homes and more leisure, more goods must be produced in proportion to the population. And this is not impossible, for through training for his work the worker increases his productive powers. The training which the industries give has been mentioned. That which the public schools offer is somewhat limited in scope, but there is a constant tendency to extend it to more fields than have hitherto been covered. The training for office work which is given in the commercial high schools and the shop work taught in the technical schools are being supplemented with courses in commercial design, dressmaking, and salesmanship, and other lines of vocational training are in contemplation. The community is coming to understand that it has a duty to educate its children to earn a good living as well as to vote intelligently. As young people take advantage of the opportunity which schools afford they will protect themselves against the danger of low wages and protect the community against a lowered production which spells poverty.

Effect of our industrial growth on methods of distribution.
Advertising. As the industries of the United States have grown to greater and greater dimensions and at the same time have become more and more centralized, the problem of disposing of the goods produced has been increasingly serious. Manufacturers have been able to double their output in a few months by the use of improved methods and better machinery, but to dispose of their product has presented great difficulties. Even when there were plenty of people ready and anxious for the goods, it was not always possible, under the old selling methods, to get in touch with the consumer. To meet this difficulty new distribution systems have sprung up, among the most interesting of which are the department stores, the mail-order houses, and the sales department of manufacturing plants. All three rely extensively upon advertising as a means of reaching the consumer. Advertising is of many kinds. It runs from the billboard and poster through newspaper and magazine advertisements to the circular letter. In reality it is nothing more than selling by means of the printed word instead of the spoken word. Like all selling it must perform two services to the customer: it must educate him in regard to the goods and it must inform him how to satisfy the need which has been aroused—how and where the goods advertised may be obtained. It serves the manufacturer and the distributors by enabling them to reach a larger market. Careful advertising may do more than that. It may enable the producers to keep production and consumption very close together. In this way the manufacturer is not caught with unsalable goods on his hands, and yet the need is constantly supplied.

The department store. The department store, with its various lines of goods under one roof, is a great saving of time to the shopper. As the wants of people have become more varied and the goods offered for sale have taken the place, to an ever greater extent, of homemade wares, the problem of buying family supplies has become a serious problem to the busy housekeeper. With the advent of the department store this problem has been largely solved. Like all large-scale business ventures it offers opportunity

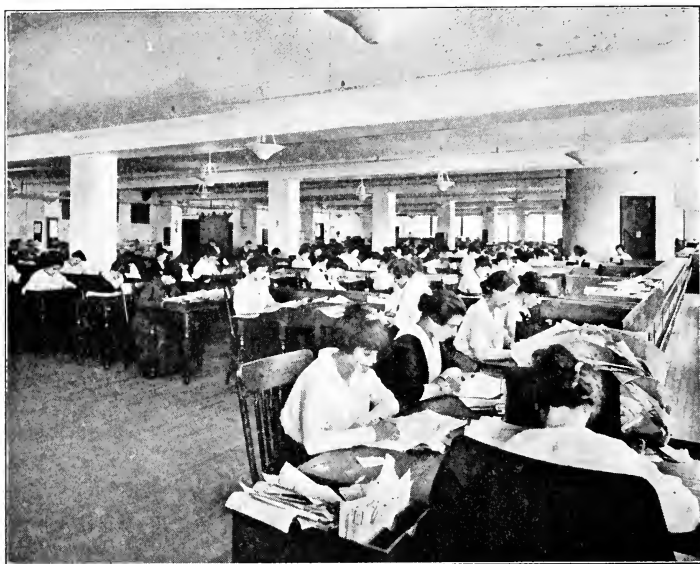


· PART OF ONE FLOOR OF A LARGE DEPARTMENT STORE

In the picture are to be seen the following departments: neckwear, veilings, and lace, leather bags, handkerchiefs, silk underwear, jewelry, watches, and silver

for economies which often enable the department store to undersell the small shop, and this also redounds to the advantage of the consumer as well as the merchant.

The mail-order house. The mail-order house is very much like a department store which does business by mail. While the department store is planned to supply the city housekeeper with



THE CLERICAL FORCE OF A MAIL-ORDER HOUSE ENGAGED IN WRITING
ADJUSTMENT LETTERS

everything she needs, from a dish pan to a piano or an evening gown, the mail-order house renders the same service to the farmer's wife or the small-town resident. By means of elaborate catalogues, in which are pictured and described with minute care the goods they handle, the house reaches the customer. This method of reaching the consumer has attracted many of the department stores, which have opened mail-order departments. Some manufacturers have followed in the train of the stores and sell their

product by mail. This is especially true of the publishing houses, some of which do a large part of their business in this way.

Manufacturers' sales departments. Years ago it was customary for the manufacturer to dispose of his goods to merchants who, as wholesale dealers, supplied the retailers. Of late the manufacturer has taken over that distribution of his product which



PICKING GOODS TO FILL ORDERS IN A MAIL-ORDER HOUSE

he used to leave to the middleman. By means of salesmen and advertising campaigns he attempts to reach the retailer himself. More than this, many manufacturers ignore the importers and go directly into the foreign market—as they have gone into the domestic market—with salesmen, special representatives, and advertising matter of all kinds.

Effect of industrial growth on record-keeping. In order to handle the business of a large manufacturing plant innumerable records must be kept and countless letters and reports must be

written. To do this business in the most efficient and inexpensive manner a great system of record-keeping has grown up. There is a special department—the accounting department—given over to keeping track of the income and outgo, figuring the cost of every type of goods produced, and preparing the statistics necessary to indicate to the management whether the business policy which they are pursuing is increasing or decreasing the profits of the business. Another department—the filing department—is devoted to caring for the papers of the house and rendering them available when they are wanted. A third—the correspondence or stenography department—attends to the correspondence. All these branches of an industrial plant increase the efficiency in conducting the business, but at the same time they add expenses of which our forefathers knew nothing.

Effect of the World War on industry. Although it is as yet too early to tell just what will be the effect of the World War on industry, certain results are already discernible. In the first place, industries in which this country had not hitherto excelled have sprung into being. An excellent illustration of this is the dye industry. Before the war Germany manufactured dyes better and cheaper than could be produced elsewhere. When the English blockade cut off the supplies of dyes from Germany, the chemists of this country set about discovering the secret of dye manufacture. At the present time we have a dye industry which is supplying the manufacturers of much of the world with the dyes which they are using. The building of ocean ships has been stimulated in the same way by the need for ships which the war created, although here the government has taken a very direct part, so that there is no assurance that the industry will survive the return to normal conditions.

In another direction the effect of the war on industry promises to be even greater. The terrible experience through which the world has passed has brought out, as never before, the value of human beings as opposed to property. Ancient systems of law frequently guarded property quite as zealously as they did human life. A man was put to death for stealing a sheep, and he was

thrown into jail for owing money which he could not pay. Gradually our laws have been modified to meet the more humane sentiments of the present day, but the methods of doing business in the nineteenth century have continued to smack of the ancient attitude of the law. Labor was regarded as a commodity. The wages paid to workers were based on competition. A manufacturer paid what the demand for labor compelled him to pay, whether the wage was a fair wage or not. In dull times, when factories were running on part time, wages were forced down to the lowest sum on which the workers could live. They could not be forced below this or men would refuse to work at all. For long the free lands in the West offered an ambitious man an escape from such conditions, and so drew off laborers and tended to bring about an equilibrium between the demand for labor and the supply. The conditions under which men worked were such as the employer chose to establish. The worker was not expected to have any voice in the business of which he formed a part. With the new attitude toward human life many significant changes are coming about. Wages are examined in the light of the cost of living, labor conditions are considered from the point of view of the health of the nation, and laborers are, in many industries, given a voice in determining the conditions under which they work.

TOPICS FOR DISCUSSION

1. How do American labor unions differ from medieval craft guilds?
2. Compare government regulation of industry in the United States today with government regulation in England in the mercantile period.
3. What advantages does the American factory worker enjoy over the medieval craftsman? Which of these advantages are due to the invention of machinery, which to a democratic form of government, which to the discoveries of science, and which to a finer social sense among the leaders of public opinion?
4. In what respect are modern factory workers less well off than medieval craftsmen? How may these disadvantages be removed?
5. Explain how modern industry has made necessary modern advertising, the department store, and the mail-order house.

6. Select the industry in which you are most interested. Make a list of the books from which you may gather information in regard to this industry, factories which you might visit, and people whom you might interview. Gather information from these sources and write it down. Outline the history and present state of the industry and present the story to the class. (Such an exercise may be assigned in place of a final examination. In that case the report should be written and handed in accompanied by the bibliography and notes.)

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